Author Index

Abbel, G.: see Kapteijn, F., 1036
Abbott, J. M., Erbatur, O. and Gaines, A. F.: Reductive ethylation in ethereal solvents, 1441
Adler, J. and Huttinger, K. J.: Mixtures of potassium sulphate and iron sulphate as catalysts for water vapour gasification of carbon. 1. Kinetic studies, 1393
Adler, J., Huttinger, K. J. and Minges, R.: Mixtures of potassium sulphate and iron sulphate as catalysts for water vapour gasification of carbon. 2. Wettability phenomena and reactions of the catalyst precursors, 1397
Affens, W. A., Hall, J. M., Holt, S. and Hazlett, R. N.: Effect of composition on freezing points of model hydrocarbon fuels, 543
Agarwal, P. K., Genetti, W. E. and Lee, Y. Y.: Devolatilization of large coal particles in fluidized beds, 1748
Agarwal, P. K., Genetti, W. E. and Lee, Y. Y.: Model for devolatilization of coal particles in fluidized beds, 1157
Agarwal, P. K., Genetti, W. E., Lee, Y. Y. and Prasad, S. N.: Model for drying during fluidized-bed combustion of wet low-rank coals, 1020
Agnew, J. B., Jackson, W. R., Larkins, F. P., Rash, D., Rogers, D. E., Thewlis, P. and White, R.: Hydroliquefaction of Victorian brown coal in a continuous reactor: 1. Effects of residence time, temperature and catalysts on conversion, 147
Aikin, T. L. H., Cashion, J. D. and Ottrey, A. L.: Mössbauer analysis of iron phases in brown coal ash and fireside deposits, 1269
Aiura, M., Masunaga, T., Moriya, K. and Kageyama, Y.: Chemistry of solvents in coal liquefaction. Quantification of transferable hydrogen in coal-derived solvents, 1138
Akakura, T.: see Amano, A., 718
Akuzawa, K.: see Öya, A., 1547
Alemany, L. B., Grant, D. M., Pugmire, R. J. and Stock, L. M.: Solid state magnetic resonance spectra of Illinois No. 6 coal and some reductive alkylation products, 513
Alexander, C. C.: see Thorpe, A. N., 662
Allen, D. T. and Gavalas, G. R.: Reactions of methylene and ether bridges, 586
Allen, D. T., Petrakis, L., Grandy, D. W., Gavalas, G. R. and Gates, B. C.: Determination of functional groups of coal-derived liquids by n.m.r. and elemental analysis, 803
Allen, R. M. and VanderSande, J. B.: Analysis of sub-micron mineral matter in coal via scanning transmission electron microscopy, 24
Amano, A., Yamada, M., Shindo, T. and Akakura, T.: Coal liquefaction induced by hydrogen atoms, 718
Amestica, L. A. and Wolf, E. E.: Supercritical toluene and ethanol extraction of an Illinois No. 6 coal, 227
Anderson, J. L.: see Baltus, R. E., 530
Anderson, R. R. and Bockrath, B. C.: Effect of sulphur on coal liquefaction in the presence of dispersed iron molybdenum catalysts, 329
Andrews, G. F. and Maczuga, J.: Bacterial removal of pyrite from coal, 297
Angelov, S.: see Lazarov, L., 952
Appell, H. R.: see Utz, B. R., 1671
Armstrong, L. G.: see Barron, P. F., 1276
Arpino, P.: see Dorbon, M., 565
Arpino, P.: see Schmitter, J. -M., 557
Austin, L. G.: see Conn, R. E., 1664

Babu, D. R. and Cormack, D. E.: Effect of low-temperature oxidation on the composition of Athabasca bitumen, 858
Badin, E. J.: see Frazier, G. C., 499
Baetens, C.: see Frumerman, R., 627
Bainbridge, N. W.: see Norden, P., 943
Baird, T.: Characterization of carbons formed on nickel surfaces, 1081
Baker, C. K.: see Boyapati, E., 551
Baker-Jarvis, J. and Inguva, R.: Heat transfer in layered media with application to oil shale materials, 1726
Baltus, R. E. and Anderson, J. L.: Comparison of g.p.c. elution characteristics and diffusion coefficients of asphaltenes, 530
Barbella, R.: see Ciajolo, A., 657
Barron, P. F., Bendall, M. R., Armstrong, L. G. and Atkins, A. R.: Application of the DEPT pulse sequence for the generation of $^{13}CH_n$ subspectra of coal-derived oils, 1276
Barrows, R. D. and Elliott, D. C.: Analysis of chemical intermediates from low-temperature steam gasification of biomass, 4
Bartle, K. D., Mulligan, M. J., Taylor, N., Martin, T. G. and Snape, C. E.: Molecular mass calibration in size-exclusion chromatography of coal derivatives, 1556
Bartle, K. D.: see Snape, C. E., 883
Barton, W. A., Lynch, L. J. and Webster, D. S.: Aspects of the molecular structure of a bituminous vitrinite. Nuclear magnetic resonance study of the effects of imbibed pyridine, 1262
Bartosiewicz, L.: see Otto, K., 477
Bayraktar, K. N. and Lawson, G. J.: Properties and potential of formed cokes derived from Turkish lignites by carbonization of binderless briquettes, 1221
de Beer, V. H. J., Derbyshire, F. J., Groot, C. K., Prins, R., Scaroni, A. W. and Solar, J. M.: Hydrodesulphurization activity and coking propensity of carbon and alumina supported catalysts, 1095
van Bekkum, H.: see de Vlieger, J. J., 334
Bell, A. T.: see Salim, S. S., 469
Bendall, M. R.: see Barron, P. F., 1276
Benjamin, B. M., Douglas, E. C. and Canonico, D. M.: New chemical structural features of coal, 888
Benner, L. S.: see Lai, Y. -H., 231
Billimora, R.: see Tao, F. F., 158
Bishop, A. A.: see Deshpande, G. V., 956
Blackburn, D. T.: see Verheyen, T. V., 1629
Blaustein, B. D.: see Utz, B. R., 1671
Blessing, J. E.: see Ross, D. S., 1206
Bloomquist, C. A. A.: see Calkins, W. H., 1226
Bloomquist, C. A. A.: see Dyrkacz, G. R., 536, 1166, 1367
Bockrath, B. C.: see Anderson, R. R., 329
Bockrath, B. C.: see Volker, E. J., 285
van Bodegom, B., van Veen, J. A. R., van Kessel, G. M. M., Sinnige-Nijssen, M. W. A. and Stuiver, H. C. M.: Action of solvents on coal at low temperatures: 1. Low-rank coals, 346
Boduszynski, M. M., Hurtubise, R. J. and Silver, H. F.: Relationship between solvent-derived and compound-class fractions in coal-derived distillates and vacuum still bottoms, 93
Boehm, H. P., Mair, G., Stoehr, T., de Rincón, A. R. and Tereczki, B.: Carbon as a catalyst in oxidation reactions and hydrogen halide elimination reactions, 1061
Bombaugh, K. J., Milosavljevic, M. and Janes, T. K.: Comparison of leachable trace element levels in coal gasifier ash with levels in power plant ash, 505
Bonifaz, C.: see Calkins, W. H., 1716
Bonny, A. M.: Polyborane-derived metal borides. 1. Hydrodesulphurization catalysts with potential for coal liquefaction, 1410
Botteghi, C.: see Conti, L., 1414
Boudou, J. -P.: Relations between Rock-Eval T_{max} and other parameters in a sedimentologically homogeneous coal series, 430
Boudou, J.-P., Mariotti, A. and Oudin, J.-L.: Unexpected enrichment of nitrogen during the diagenetic evolution of sedimentary organic matter, 1508
Bourgeois, C.: see Siffert, B., 834
Box, A. J. J.: see Valkovic, V., 1357
Boyapati, E., Oates, W. A., Moxon, N. T., Day, J. C. and Baker, C. K.: The weathering characteristics of coking coals: use of a gas flow test in assessing weathering propensity, 551
Brenner, D.: Microscopic *in-situ* studies of the solvent-induced swelling of thin sections of coal, 1324
Bronikowski, T.: Model selection for aqueous slurry coal desulphurization, 116
Brown, R. S.: see Hellgeth, J. W., 453
Brozoski, B.: see Senftle, J. T., 245
Bruce, A. J.: see Moynihan, C. T., 378
Bruce, M. R.: see Olah, G. A., 1130, 1432
Bryson, R. L.: see Verheyen, T. V., 1629
Burgar, M. I.: New approach to the analysis of the ^{13}C CP/MAS n.m.r. spectrum of coal, 1621
van der Burgh, N.: see Timmner, J. M., 1645
Burnett, J. C.: see Solash, J., 217
Burnham, A. K. and Happe, J. A.: On the mechanism of kerogen pyrolysis, 1353
Burnham, A. K.: see Ward, R. L., 909
Burr, J. G. and Javeri, I.: High temperature hydrogenolysis of bibenzyl, 857
Bustin, R. M.: see Mathews, W. H., 548

Cagniant, D.: see Dumay, D., 1544
Caldwell, K. D.: see Graff, K. A., 621
Caley, W. F.: see Cleyle, P. J., 1579
Calkins, W. H., Hagaman, E. and Zeldes, H.: Coal flash pyrolysis. 1. An indication of the olefin precursors in coal by CP/MAS ^{13}C n.m.r. spectroscopy, 1113
Calkins, W. H. and Tyler, R. J.: Coal flash pyrolysis. 2. Polymethylene compounds in low temperature flash pyrolysis tars, 1119

Calkins, W. H.: Coal flash pyrolysis. 3. An analytical method for polymethylene moieties in coal, 1125
Calkins, W. H., Hovsepian, B. K., Dyrkacz, G. R., Bloomquist, C. A. A. and Ruscic, L.; Coal flash pyrolysis 4. Polymethylene moieties in coal macerals, 1226
Calkins, W. H., Hovsepian, B. K., Dyrkacz, G. R., Bloomquist, C. A. A. and Ruscic, L.; Coal flash pyrolysis. 4. Polymethylene moieties in coal macerals, 1226
Calkins, W. H. and Bonifaz, C.: Coal flash pyrolysis: 5. Pyrolysis in an atmosphere of methane, 1716
Camaioni, D. M.: see Franz, J. A., 990
Canonico, D. M.: see Benjamin, B. M., 888
Cardillo, P., Giavarini, C. and Vecchi, C.: Characteristics of bitumens from Italian bituminous rocks and shales, 1518
Carlson, R. H.: see Cox, J. A., 1334
Carr, N. L.: see King Jr., W. E., 178, 1143
Carter, M. A., Glasson, D. R. and Jayaweera, S. A. A.: Dynamic thermogravimetric studies on the effect of boric oxide on a coke and a char, 1068
Cashion, J. D.: see Aikin, T. L. H., 1269
Castle, R. N.: see Kong, R. C., 702
Caswell, S. A., Holmes, I. F. and Spears, D. A.: Total chlorine in coal seam profiles from the South Staffordshire (Cannock) coalfield, 782
Caswell, S. A., Holmes, I. F. and Spears, D. A.: Water-soluble chlorine and associated major cations from the coal and mudrocks of the Cannock and North Staffordshire coalfields, 774
Cebolla, V. L.: see Mastral, A. M., 1422
Cerfontain, M. B.: see Moulijn, J. A., 1043
Chaklader, A. C. D.: see Gill, W. W., 1385
Chambers Jr., R. R. and McKamey, D.: Displacement of retained pyridine by aqueous tetrahydrofuran from Illinois No. 6 coals, 868
Chandra, D., Ghose, S. and Chaudhuri, S. G.: Abnormalities in the chemical properties of tertiary coals of Upper Assam and Arunachal Pradesh, 1318
Chaudhuri, S. G.: see Chandra, D., 1318
Chen, T. T.: see Quon, D. H. H., 939
Chien, P. -L. and Weller, S. W.: Effect of tetralin dissociation on coal liquefaction: tubing bomb *versus* batch autoclave, 878
Child, H. R.: see Triolo, R., 274
Chiu, Y. -F.: see Tsai, C. -Y., 866
Chong, S. -L. and McKay, J. F.: Extractable metal salts of carboxylic acids in Green River oil shale, 303
Chornet, E.: see Tarki, H. T., 30
Christensen, R. J., Lindberg, W. R. and Dorrence, S. M.: Viscous characteristics of Utah tar sand bitumen, 1312
Chrusciel, E.: see Kreft, A., 1281
Chui, Y.-F. and Hong, M.-T.: Properties of Taiwan coking coal, 1378
Chui, Z.-d.: see Nieh, H.-r., 767
Chung, K. E. and Goldberg, I. B.: Relation of the chemical structure of coal to its hydropyrolysis, 482
Ciajolo, A. and Barbella, R.: Pyrolysis and oxidation of heavy fuel oils and their fractions in a thermogravimetric apparatus, 657
Clark, K. N.: see Foster, N. R., 66, 716
Clark, K. N.: see Shibaoka, M., 169
Clark, P. D., Hyne, J. B. and Tyrer, J. D.: Some chemistry of organosulphur compound types occurring in heavy oil sands. 2. Influence of pH on the high temperature hydrolysis of tetrahydrothiophene and thiophene, 125
Clark, P. D. and Hyne, J. B.: Chemistry of organosulphur compound types occurring in heavy oil sands: 3. Reaction of thiophene and tetrahydrothiophene with vanadyl and nickel salts, 1649
Clarke, J. W. Rantell, T. D. and Snape, C. E.: Reactivity of cycloalkanes during the solvent extraction of coal, 1476
Cleyle, P. J., Caley, W. F., Stewart, I. and Whiteway, S. G.: Decomposition of pyrite and trapping of sulphur in a coal matrix during pyrolysis of coal, 1579
Cliff, D. I., Doolan, K. R., Mackie, J. C. and Tyler, R. J.: Products from rapid heating of a brown coal in the temperature range 400–2300°C, 394
Clinton, C. S.: see Vasilakos, N. P., 1561
Cole, D. A.: see Herman, R. G., 673
Collins, C. J., Triolo, R. and Lietzke, M. H.: Do molecular weight determinations of coal-derived materials give meaningful answers?, 1202
Conn, R. E. and Austin, L. G.: Studies of sintering of coal ash relevant to pulverized coal utility boilers: 1. Examination of the Raask shrinkage–electrical resistance method, 1664
Conti, L. Botteghi, C. and Mansani, R.: Hydroliquefaction of Sulcis low-rank coal. 1. Conversion to low-sulphur fuel oil, 1414
Cooke, N. E. and Gaikwad, R. P.: Removal of pyridine and quinoline from coal and coal extracts, 1468
Corcoran, J.: see Shibaoka, M., 134
Cormack, D. E.: see Babu, D. R., 858
Corry, R. G.: see Silver, H. F., 872
Couture, C.: see Ripmeester, J. A., 522
Cox, J. A., Larson, A. E. and Carlson, R. H.: Estimation of the inorganic-to-organic chlorine ratio in coal, 1334
Cox, J. L.: Concern over coal samples, 1030
Cronauer, D. C., Ruberto, R. G., Jenkins, R. G., Davis, A. and Hoover, D. S.: Liquefaction of partially dried and oxidized coals. 3. Liquefaction results, 71
Cronauer, D. C.: see Hagaman, E. W., 915
Cross, R. M.: see Evans, J. C., 1471
Cumming, J. W.: Reactivity assessment of coals via a weighted mean activation energy, 1436
Cundy, V. A., Maples, D. and Dixit, C. S.: Performance of a sonic burner system firing coal–oil mixtures, 121
Curtis, C. W., Guin, J. A. and Kwon, K. C.: Coal solvolysis in a series of model compound systems, 1404

Dack, S. W., Hobday, M. D., Smith, T. D. and Pilbrow, J. R.: Free-radical involvement in the drying and oxidation of Victorian brown coal, 39
Daley, R. D.: see Reuther, J. J., 604
Dalling, D. K., Haider, G., Pugmire, R. J., Shabtai, J. and Hull, W. E.: Application of new ^{13}C n.m.r. techniques to the study of products from catalytic hydrode-oxygenation of SRC-II liquids, 525
Das, B. S.: see Poirier, M. -A., 361
Davis, A.: see Cronauer, D. C., 71
Davis, A.: see Given, P. H., 1655
Davis, A.: see Riesser, B., 1253
Davis, A.: see Senftle, J. T., 245
Day, J. C.: see Boyapati, E., 551
DeGroot, W. F. and Shafizadeh, F.: Kinetics of gasification of Douglas Fir and Cottonwood chars by carbon dioxide, 210
Derbyshire, F. J., Odoerfer, G. A. and Whitehurst, D. D.: Coal liquefaction in nitrogen compounds, 56
Derbyshire, F. J.: see de Beer, V. H. J., 1095
Deshpande, G. V., Holder, G. D., Bishop, A. A., Gopal, J. and Wender, I.: Extraction of coal using supercritical water, 956
Diaz, J. M. and Hernanz, J. F.: Flotation and sulphur selectivity of a bituminous coal with different degrees of oxidation, 1466
von der Dick, H. and Kalkreuth, W.: Three-dimensional and synchronous fluorescence spectroscopy: A new approach applied to coalification studies, 1636
Dickerhoof, D. W.: see Rayner-Canham, G. W., 1472
Dissanayake, C. B.: Geochemistry of the Muthurajawela peat deposit of Sri Lanka, 1494
Dixit, C. S.: see Cundy, V. A., 121
Doolan, K. R.:see Cliff, D. I., 394
Dorbon, M., Ignatiadis, I., Schmitter, J.-M., Arpino, P., Guiochon, G., Toulhoat, H. and Huc, A.: Identification of carbazoles and benzocarbazoles in a coker gas oil and influence of catalytic hydrotreatment on their distribution, 565
Dorbon, M.: see Schmitter, J. -M., 557
Dorrence, S. M.: see Christensen, R. J., 1312
Douglas, E. C.: see Benjamin, B. M., 888
Drake, J. A. G., Jones, D. W., Games, D. E. and Gower, J. L.: Analysis of solvent extracts of bituminous coal macerals by chromatography ^{1}H n.m.r. and field-desorption mass spectrometry, 634
Duber, S. and Wieckowski, A. B.: Effects of organic solvents on the EPR spectrum of coal, 1641
Duber, S. and Wieckowski, A. B.: Excited triplet states in bituminous coal, 1474
DuBow, J.: see Mraz, T., 927
DuBow, J.: see Rajeshwar, K., 920
Dulong, F. T.: see Thorpe, A. N., 662
Dumay, D., Kirsch, G., Gruber, R. and Cagniant, D.: Deno's oxidation–analysis of oxidation products from model compounds, 1544
Durai-Swamy, K.: see Kim, S. S., 510
Dutta, P. K. and Holland, R. J.: Acid–base characteristics of petroleum asphaltenes as studied by non-aqueous potentiometric titrations, 197
Dyrkacz, G. R., Bloomquist, C. A. A. and Ruscic, L.: Chemical variations in coal macerals separated by density gradient centrifugation, 1166
Dyrkacz, G. R., Bloomquist, C. A. A. and Ruscic, L.: High-resolution density variations of coal macerals, 1367
Dyrkacz, G. R., Bloomquist, C. A. A. and Solomon, P. R.: Fourier transform infrared study of high-purity maceral types, 536
Dyrkacz, G. R.: see Calkins, W. H., 1226
Dyrkacz, G. R.: see King, H. -H., 341
Dyrvold, B.: see Kandiyoti, R., 1583
Dziunikowski, B.: see Kreft, A., 1281

Eaton, H. C.: see Patil, M. D., 788
Edelson, E. H.: see Olah, G. A., 1130, 1432
Edgar, T. F.: see Tseng, H. P., 385
Ehrburger, P. and Lahaye, J.: Capillary flow of liquid pitch, 1677
Ehrburger, P. and Lahaye, J.: Physico-chemical interactions of coal and pitch during co-carbonization, 494
Ekmann, A. C.: Viscosities of coal–water–methanol mixtures, 1182
Elder, J. P., and Harris, M. B.: Thermogravimetry and differential scanning calorimetry of Kentucky bituminous coals, 262

Elliott, D. C.: see Barrows, R. D., 4
Elliott, D. C.: see Schirmer, R. E., 368
Erbatur, O.: see Abbott, J. M., 1441
Espitalie, J.: see Madec, M., 1720
Esumi, K.: see Kawai, T., 1615
Evans, J. C., Rowlands, C. C., Cross, R. M. and Rigby, N.: E.p.r. studies of outburst-prone anthracite coal, 1471

Fakoukakis, E. P.: see Mathur, V. K., 1700
Ferguson, E., Schlogl, R. and Jones, W.: Gasification of potassium-intercalated and impregnated natural graphites, 1048
Ferraz, M. C. A.: see Figueiredo, J. L., 1059
Ferracuti, F.: see Wallace, D., 862
Figueiredo, J. L., Orfão, J. J. M. and Ferraz, M. C. A.: Catalytic gasification of chars, 1059
Filby, F. H.: see Iskander, F. Y., 280
Filby, R. H.: see Palmer, C. A., 318
Finseth, D. H.: see Kalliat, M., 1178
Finseth, D. H.: see Robbat, A., 1710
Flemming, R. H.: see Wood, B. J., 1600
Foster, N. R., Weiss, R. G., Young, M. M. and Clark, K. N.: Short contact time dissolution of Liddell coal, 66
Foster, N. R., Young, M. M., Clark, K. N. and Weiss, R. G.: Simulation of chemical rate processes in short contact time coal liquefaction, 716
Foster, N. R.: see Shibaoka, M., 169
Franz, J. A. and Camaioni, D. M.: Study of deuterium transfer, isotope effects and structural distributions of products of reactions of coals in deuterated tetralin using ^{2}H and ^{13}C FT-n.m.r. and solid-state ^{13}C FT-n.m.r., 990
Frazier, G. C., Mason, C. and Badin, E. J.: Thermogravimetry-combustion characteristics of high-carbon fluidized-bed cyclone ashes, 499
Frazier, M. E.: see Wilson, B. W., 46
Fredericks, P. M., Osborn, P. R. and Swinkels, D. A. J.: Rapid coal characterization by FT-i.r. spectroscopy, 139
Friedlaender, F. J.: see Jeong, K. M., 1459
Frumerman, R. and Baetens, C.: Universal size distribution of run-of-mine bituminous coals in the Eastern USA, 627
Fujita, K.: see Suzuki, T., 1706
Fujita, K.: see Watanabe, Y., 752
Fujitsu, H.: see Komatsubara, Y., 1738
Fujitsu, H.: see Mochida, I., 136, 847
Fung, D. P. C. and Kim, S. D.: Chemical reactivity of Canadian coal-derived chars, 1197
Fung, D. P. C.: see Ng, S. H., 1564
Fynes, G., James, R. G., Ladner, W. R. and Newman, J. O. H.: Structural differences in the tars and chars from the pyrolysis of coals of different rank in hydrogen and in nitrogen, 897

Gaikwad, R. P.: see Cooke, N. E., 1468
Gaines, A. F.: see Abbott, J. M., 1441
Galbraith, M. N.: see Koplick, A. J., 1570
Games, D. E.: see Drake, J. A. G., 634
Gannon, R. E.: see Neoh, K. G., 1347
Gao, G., Yan, B. and Yang, L.: Determination of total fluorine in coal by the combustion-hydrolysis/fluoride-ion selective method, 1552
Gates, B. C.: see Allen, D. T., 803
Gavalas, G. R.: see Allen, D. T., 586, 803
Gavilan, J. M.: see Ibarra, J. V., 1743
Gavilan, J. M.: see Martinez, M. T., 692
Gavilan, J. M.: see Mastral, A. M., 1422
Ge, J.: see Jones, L., 1152
Ge, J.: see Li, N. C., 1285
Genetti, W. E.: see Agarwal, P. K., 1020, 1157, 1748
Ghose, S.: see Chandra, D.,1318
Giavarini, C.: Visbreaker and straight-run bitumens, 1515
Giavarini, C.: see Cardillo, P., 1518
Giddings, J. C.: see Graff, K. A., 621
Gill, W. W. and Chaklader, A. C. D.: Material characteristics affecting formcoke, 1385
Given, P. H., Spackman, W., Davis, A., Zoeller, J., Jenkins, R. G. and Kahn, R.: Chemistry of some maceral concentrates from British coals: provenance of samples and basic compositional data, 1655
Given, P. H.: see Harper, A. M., 793
Given, P. H.: see Meuzelaar, H. L. C., 640
Given, P. H.: see Sobkowiak, M., 1245
Glasson, D. R.: see Carter, M. A., 1068
Goldberg, I. B.: see Chung, K. E., 482
Goldberg, I. B.: see Skowronski, R. P., 440
Goodarzi, F.: Chitinous fragments in coal, 1504
Goodarzi, F.: Optical properties of carbonized sporinite in vitrinite/sporinite blends, 827
Goodarzi, F.: Optical properties of high-temperature heat-treated vitrinites, 820
Goodarzi, F.: Retention of liptinitic structure in vitrinite chars, 239
Goodarzi, F.: see Ragan, S., 1382
Gopal, J.: see Deshpande, G. V., 956
Gower, J. L.: see Drake, J. A. G., 634
Graff, K. A., Caldwell, K. D., Myers, M. N. and Giddings, J. C.: Characterization of fine coal particles by steric field-flow fractionation, 621
Grandy, D. W.: see Allen, D. T., 803
Grant, D. M.: see Alemany, L. B., 513
Gray, B. F., Griffiths, J. F. and Jones, J. C.: Qualitative aspects of ethylene oxide oxidation in a well-stirred flow reactor, 43
Green, J. B., Hoff, R. J., Woodward, P. W. and Stevens, L. L.: Separation of liquid fossil fuels into acid, base and neutral concentrates 1. An improved nonaqueous ion exchange method, 1290
Green, T. K., Kovac, J. and Larsen, J. W.: A rapid and convenient method for measuring the swelling of coals by solvents, 935
Green, T. K. and Larsen, J. W.: Coal swelling in binary solvent mixtures: pyridine-chlorobenzene and *N,N*-dimethylaniline–alcohol, 1538
Greinke, R. A.: ^{1}H n.m.r. technique for characterization of polymerized petroleum pitches, 1374
Griffiths, J. F.: see Gray, B. F., 43
Groot, C. K.: see de Beer, V. H. J., 1095
Grootveld, G.: see Nieskens, M. P. J. C., 205
Gruber, R.: see Dumay, D., 1544
Guerrero-Ruiz, A.: see Rodriguez-Reinoso, F., 1089
Guffey, F. D.: see Retima, A., 310
Guin, J. A.: see Curtis, C. W., 1404
Guiochon, G.: see Dorbon, M., 565
Guiochon, G.: see Schmitter, J. -M., 557
Guo, S. -c.: see Nieh, H. -r., 767
Gyurcsak, J.: see Kreft, A., 1281

Hagaman, E. W., Schell, F. M. and Cronauer, D. C.: Oil-shale analysis by CP/MAS-^{13}C n.m.r. spectroscopy, 915
Hagaman, E.: see Calkins, W. H., 1113
Haider, G.: see Dalling, D. K., 525
Hall, J. M.: see Affens, W. A., 543
Hamilton, R. T., Sams, D. A. and Shadman, F.: Variation of rate during potassium-catalysed CO_2 gasification of coal char, 1008
Hamrin Jr., C. E.: see Liu, K. H. -D., 18
Happe, J. A.: see Burnham, A. K., 1353
Hara, T.: see Young, L. -J. S., 816
Haringa, H.: see Wigmans, T., 870
Harper, A. M., Meuzelaar, H. L. C. and Given, P. H.: Correlations between pyrolysis mass spectra of Rocky Mountain coals and conventional coal parameters, 793
Harper, A. M.: see Meuzelaar, H. L. C., 640
Harris, I. J.: see Polat, S., 669
Harris, M. B.: see Elder, J. P., 262
Hasegawa, Y.: see Yoshida, T., 282
Hatano, M.: see Ohtsuka, Y., 1363
Hazlett, R. N.: see Affens, W. A., 543
Hazlett, R. N.: see Jones, L., 1152
Hazlett, R. N.: see Li, N. C., 1285
Hazlett, R. N.: see Solash, J., 217
Heard, I. and Senftle, F. E.: Chemical oxidation of anthracite with hydrogen peroxide via the Fenton reaction, 221
Heitz, W. L.: see Nieskens, M. P. J. C., 205
Hellgeth, J. W., Brown, R. S. and Taylor, L. T.: Effect of coal liquefaction conditions on the trace element content of the soluble non-volatile product, 453
Hellgeth, J. W. and Taylor, L. T.: Liquefaction of subbituminous coals with a basic nitrogenous model process solvent, 961
Heng, S.: see Shibaoka, M., 134, 174
Hengel, T. D. and Walker Jr., P. L.: Catalysis of lignite char gasification by exchangeable calcium and magnesium, 1214
Henning, K. -D.: see Klein, J., 1064
Heppner, P.: see Košina, M., 838
Heredy, L. A.: see Skowronski, R. P., 440
Herman, R. G., Simmons, G. W., Cole, D. A., Kuzmicz, V. and Klier, K.: Catalytic action of minerals in the low temperature oxidation of coal, 673
Hernanz, J. F.: see Diaz, J. M., 1466
Hill, G. R.: see Meuzelaar, H. L. C., 640
Hillebrand, W., Hodek, W. and Kölling, G.: Steam cracking of coal-derived oils and model compounds. 1. Cracking of tetralin and t-decalin, 756
Hillebrand, W., Hodek, W. and Kölling, G.: Steam cracking of coal-derived oils and model compounds. 2. Cracking of hydrogenated coal-derived oils, 762
Hobday, M. D.: see Dack, S. W., 39
Hodek, W.: see Hillebrand, W., 756, 762
Hoff, R. J.: see Green, J. B., 1290
Holder, G. D.: see Deshpande, G. V., 956
Holland, R. J.: see Dutta, P. K., 197
Holmes, I. F.: see Caswell, S. A., 774, 782
Holt, S.: see Affens, W. A., 543
Honda, H.: see Kawai, T., 1615
Hong, M. -T.: see Chui, Y. -F., 1378
Hoover, D. S.: see Cronauer, D. C., 71
Hovsepian, B. K.: see Calkins, W. H., 1226
Huang, C. B.: see Rose, G. R., 1339
Huc, A.: see Dorbon, M., 565
Huc, A.: see Schmitter, J. -M., 557
Hull, W. E.: see Dalling, D. K., 525
Hum, G. P.: see Ross, D. S., 1206, 1211
Hurtubise, R. J.: see Boduszynski, M. M., 93
Hurtubise, R. J.: see Silver, H. F., 872
Husain, A.: see Olah, G. A., 1130, 1427, 1432
Huttinger, K. J. and Minges, R.: Catalytic activity of potassium halides in water vapour gasification of graphite, 9
Huttinger, K. J.: see Adler, J., 1393, 1397
Hyne, J. B.: see Clark, P. D., 125, 1649

Ibaragi, S.: see Ouchi, K., 78, 427
Ibarra, J. V. and Moliner, R.: Copper removal from effluents using a sulphonated lignite: bath and fixed-bed studies, 373
Ibarra, J. V., Rebollar, M. and Gavilán, J. M.: Preparation of cation exchange materials by oleum sulphonation of an Utrillas Spanish lignite, 1743
Ida, S.: see Komatsubara, Y., 1738
Ignatiadis, I.: see Dorbon, M., 565
Ignatiadis, I.: see Schmitter, J. -M., 557
Ingram, G. R. and Rimstidt, J. D.: Natural weathering of coal, 292
Inguva, R.: see Baker-Jarvis, J., 1726
Inoue, K.: see Yokoyama, S., 984
Iskander, F. Y. and Filby, R. H.: Formation of anatase from titanium (IV) preasphaltenes complexes under coal liquefaction conditions, 280
Itoh, H.: see Iwata, K., 1528
Itoh, H.: see Mondragon, F., 579, 968
Itoh, H.: see Ouchi, K., 35, 78, 427, 449
Itoh, H.: see Yoshimoto, I., 978
Iwao, M.: see Kong, R. C., 702
Iwata, K., Mondragon, F., Itoh, H. and Ouchi, K.: Average structure of coal: structural analysis of pyridine extract of zinc–water–coal reaction product, 1528

Jackson, W. R.: see Agnew, J. B., 147
Jackson, W. R.: see Murase, K., 1694
Jain, S. R.: see Rajendran, G., 709
Jaksic, M.: see Valkovic, V., 1357
James, R. G.: see Fynes, G., 897
Janes, T. K.: see Bombaugh, K. J., 505
Jarand, M. L.: see Kim, S. S., 510
Javeri, I.: see Burr, J. G., 857
Jayaweera, S. A. A.: see Carter, M. A., 1068
Jenkins, R. G.: see Cronauer, D. C., 71
Jenkins, R. G.: see Given, P. H., 1655
Jenkins, R. G.: see Khan, M. R., 109
Jenkins, R. G.: see Radovic, L. R., 1028
Jeong, K. M., Petrakis, L., Takaysau, M. and Friedlaender, F. J.: Characterization of shale oil solids removed by the high-gradient magnetic separation technique, 1459
Johannes, A. H.: see Liu, K. H. -D., 18
Johns, R. B.: see Verheyen, T. V., 1629
Johnson, C. A. and Thomas, K. M.: Applications of Raman microprobe spectroscopy to the characterization of carbon deposits on catalysts, 1073
Johnston, K. P.: Hydrogenation–dehydrogenation of pyrenes catalysed by sulphided cobalt-molybdate at coal liquefaction conditions, 463
Jones, C. H. W.: see Taneja, S. P., 695
Jones, D. W.: see Drake, J. A. G., 634
Jones, J. C.: see Gray, B. F., 43
Jones, L., Hazlett, R. N., Li, N. C. and Ge, J.: Storage stability studies of fuels derived from shale and petroleum, 1152
Jones, W.: see Ferguson, E., 1048
Jüntgen, H.: Review of the kinetics of pyrolysis and hydropyrolysis in relation to the chemical constitution of coal, 731

Kaeriyama, K.: see Nakao, Y., 721
Kageyama, Y.: see Aiura, M., 1138
Kalita, S.: see Kreft, A., 1281
Kalkreuth, W.: see von der Dick, H., 1636
Kalliat, M., Schmidt, P. W. and Finseth, D. H.: Observation of colloidal growth in coal-derived liquids, 1178
Kandiyoti, R., Lazaridis, J. I., Dyrvold, B. and Weerasinghe, C. R.: Pyrolysis of a $ZnCl_2$-impregnated coal in an inert atmosphere, 1583
Kamoshita, R.: see Mondragon, F., 579
Kapteijn, F., Abbel, G. and Moulijn, J. A.: CO_2 gasification of carbon catalysed by alkali metals. Reactivity and mechanism, 1036
Kapteijn, F.: see Moulijn, J. A., 1043
Karcz, H.: see Rybak, W., 488
Kato, Y.: see Morooka, S., 947
Katoh, T.: see Mondragon, F., 579
Katoh, T.: see Yokoyama, S., 984
Kawai, T., Esumi, K., Meguro, K. and Honda, H.: Short contact time liquefaction of coal using hydrogen donor solvent, 1615
Kershaw, J. R. and Overbeek, J. M.: Supercritical gas extraction of coal with hydrogen-donor solvents, 1174
van Kessel, G. M. M.: see van Bodegom, B., 346
Khan, M. R. and Jenkins, R. G.: Thermoplastic properties of coal at elevated pressures. 1. Evaluation of a high-pressure microdilatometer, 109
Khan, R.: see Given, P. H., 1655
Khemani, R. N. and Sarkar, S.: Effect of alkali treatment on the caking properties of coal, 13
Kieboom, A. P. G.: see de Vlieger, J. J., 334
Kiennemann, A.: see Tarki, H. T., 30
Kim, S. D.: see Fung, D. P. C., 1197
Kim, S. D.: see Ng, S. H., 1564
Kim, S. S., Jarand, M. L. and Durai-Swamy, K.: Quench solvent evaluation: an e.s.r. study, 510
King, H. -H., Dyrkacz, G. R. and Winans, R. E.: Tetralin dissolution of macerals separated from a single coal, 341
King, H. -H. and Stock, L. M.: Aspects of the chemistry of donor solvent coal dissolution. Promotion of the bond cleavage reactions of diphenylalkanes and the related ethers and amines, 810
King, H. -H.: see Solomon, P. R., 1302
King Jr, W. E.: Kinetic rate model interpretation of the SRC-II liquefaction of an Ireland Mine coal, 600
King Jr, W. E., Carr, N. L., and Moon, W. G.: Hydrogen mass transfer and mixing energy effects in SRC-II coal liquefaction reactors, 1143
King Jr, W. E., Moon, W. G., Shah, Y. T. and Carr, N. L.: Experimental study of the ignition behaviour of an adiabatic SRC-II coal liquefaction reactor, 178
Kirsch, G.: see Dumay, D., 1544
Kiya, K.: see Mashimo, K., 1417
Klein, J. and Henning, K. -D.: Catalytic oxidation of hydrogen sulphide on activated carbons, 1064
Klier, K.: see Herman, R. G., 673
Klinzing, G. E. and Walker, R. J.: Equilibrium studies of the direct reduction of sulphur dioxide by coal, 1450
Koba, K. -I.: see Mochida, I., 136
Kobayashi, A.: see Ouchi, K., 78, 427
Kölling, G.: see Hillebrand, W., 756, 762
Komatsubara, Y., Ida, S., Fujitsu, H. and Mochida, I.: Catalytic activity of PAN-based active carbon fibre (PAN-ACF) activated with sulphuric acid for reduction of nitric oxide with ammonia, 1738
Komatsubara, Y.: see Mochida, I., 136
Kong, R. C., Lee, M. L., Iwao, M., Tominaga, Y., Pratap, R., Thompson, R. D. and Castle, R. N.: Determination of sulphur heterocycles in selected synfuels, 702
Koplick, A. J., Wailes, P. C., Salivin, I., Vit, I. and Galbraith, M. N.: Constitution of tars from flash pyrolysis of Australian coals: 3. A structural study of Millmerran asphaltene components by hydrogenolysis, 1570
Korai, Y.: see Mochida, I., 136, 847
Košina, M. and Heppner, P.: Macerals in bituminous coals and the coking process. 1. Effect of basic coal properties on the process of thermal degradation, 838
Kosky, P. G.: see Spiro, C. L., 133, 686
Kovac, J.: see Green, T. K., 935
Kreft, A., Chrusciel, E., Dziunikowski, B., Gyurcsak, J., Kalita, S., Lenda, A., Przybtwicz, W. and Wozniak, J.: Integrated instrumental analysis of soft brown coals, 1281
Kriz, J. F.: see Wilson, M. F., 190
Kuehn, D.: see Senftle, J. T., 245
Kusakabe, K.: see Morooka, S., 947
Kusunoki, K.: see Morooka, S., 947
Kuzmicz, V.: see Herman, R. G., 673
Kwon, K. C.: see Curtis, C. W. 1404

Ladner, W. R.: The state of combination of chlorine in coal, 726
Ladner, W. R.: see Fynes, G., 897
Lahaye, J.: see Ehrburger, P., 494, 1677
Lai, Y. -H., Benner, L. S. and Vollhardt, K. P. C.: Studies on the reaction of benzene and other hydrocarbons with aluminium trichloride: effect of catalytically activated hydrogen, 231
Lamby, E. J.: see Spiro, C. L., 133, 686
Larkins, F. P.: see Agnew, J. B., 147
Larkins, F. P.: see Murase, K., 1694
Larsen, J. W.: see Green, T. K., 935, 1538
Larson, A. E.: see Cox, J. A., 1334
Later, D. W.: see Wilson, B. W., 46
Lawson, G. J.: see Bayraktar, K. N., 1221
Lazaridis, J. I.: see Kandiyoti, R., 1583
Lazarov, L., Nietfeld, G., Puschmann, K., Angelov, S. and Stumpp, E.: Reactions of a bituminous coal with metal chlorides in carbon tetrachloride, 952
Lee, M. L.: see Kong, R. C., 702
Lee, Y. Y.: see Agarwal, P. K., 1020, 1157, 1748
Lenda, A.: see Kreft, A., 1281
Lett, R. G.: see Robbat, A., 1710
Lewis, I. C. and Singer, L. S.: Electron paramagnetic resonance of pyrolysed dihydronaphthalenes, 1478
Li, C. -F.: see Qian, S. -A., 268
Li, N. C., Hazlett, R. N., Ge, J. and Yaggi, N. F.: Light scattering studies of the stability of liquid fuels, 1285
Li, N. C.: see Jones, L., 1152
Li, N. C.: see Tewari, K. C., 573
Li, N. C.: see Young, L. -J. S., 593, 816
Lietzke, M. H.: see Collins, C. J., 1202
Lin, Q.: see Nieh, H. -r., 767
Lindberg, W. R.: see Christensen, R. J., 1312
Lindner, B. and Sjöström, K.: Operation of an internal combustion engine: lean condition with hydrogen produced in an onboard methanol reforming unit, 1485
Linton, M. and Turnbull, A. G.: Thermodynamic equilibria in the C-H system: stability and distribution of hydrocarbon compounds, 408
Liscinsky, D. S.: see Vranos, A., 185
Liu, K. H. -D., Johannes, A. H. and Hamrin Jr., C. E.: Characterization and catalytic activity of coal mineral matter. 1. Effect of hydrogen pretreatment and exposure to sulphur and nitrogen compounds, 18
Long, R. B.: see Speight, J. G., 616
de Lopez, H.: see Marsh, H., 1594
López-González, J. D.: see Rodriguez-Reinoso, F., 1089
Lubkowtiz, J. A.: see Sanchez, V., 612

Lumpkin, R. E.: see Tsai, S. C., 435
Lynch, L. J.: see Barton, W. A., 1262

McCarthy, D. J. and Poynton, H. J.: Formation of calcium silicates during processing of Julia Creek oil shale, 769
McKamey, D.: see Chambers Jr., R. R., 868
McKay, J. F.: see Chong, S. -L., 303
McKee, D. W.: see Spiro, C. L., 133, 686
MacPhee, J.: see Ripmeester, J. A., 522
Mackie, J. C.: see Cliff, D. I., 394
Maciel, G. E.: see Verheyen, T. V., 1629
Maczuga, J.: see Andrews, G. F., 297
Madec, M. and Espitalie, J.: Application of pyrolysis to the characterization and the upgrading of the Toarcian oil shales from the Paris basin, 1720
Maeda, Y.: see Ouchi, K., 35
Maekawa, Y.: see Nakao, Y., 721
Maekawa, Y.: see Okutani, T., 164
Maekawa, Y.: see Yoshida, T., 282
Mahlum, D. D.: see Wilson, B. W., 46
Mair, G.: see Boehm, H. P., 1061
Makabe, M.: see Ouchi, K., 35, 78, 449
Makabe, M.: see Yoshimoto, I., 978
Makino, K.: see Ouchi, K., 427
Makjanic, J.: see Valkovic, V., 1357
Mallya, N. and Zingaro, R. A.: Ruthenium tetroxide – a reagent with the potential for the study of oxygen functionalities in coal, 423
Mansani, R.: see Conti, L., 1414
Maples, D.: see Cundy, V. A., 121
Mariotti, A.: see Boudou, J. -P., 1508
Marsh, H., de Lopez, H. and Qian, Z.: Co-carbonization of Ashland A240 petroleum pitch with alkali metal carbonates and hydroxides, 1594
Marsh, H.: see Mochida, I., 136
Marsh, H.: see Öya, A., 747, 875
Marsh, H.: see Qian, Z., 1588
Marshall, M.: see Murase, K., 1694
Martin, T. G.: see Bartle, K. D., 1556
Martinez, M. T., Romero, C. and Gavilan, J. M.: Effects of five variables in phosphorus fixation by humic acids from lignite, 692
Mashimo, K., Kiya, K., Sato, S., Tsuchiya, H. and Wainai, T.: Hydrogenolysis products of pyridine extract of a Japanese lignite, 1417
Mason, C.: see Frazier, G. C., 499
Mastral, A. M., Cebolla, V. L. and Gavilan, J. M.: Alkyl aryl ethers in the lignite solubilization. 1. Study of the process, 1422
Mastral, A. M. and Rubio, B.: Recovery, fractionation and study of oils from a lignite, 355
Masunaga, T.: see Aiura, M., 1138
Mathews, W. H. and Bustin, R. M.: Changes associated with natural *in situ* weathering of a coking coal from southeastern British Columbia, 548
Mathur, V. K., Fakoukakis, E. P. and Ruether, J. A.: Coal liquefaction using ore catalysts, 1700
Matsubara, K.: see Ouchi, K., 78
Matsunaga, S.-i.: see Ozawa, S., 719
Matsuura, M.: see Ozawa, S., 719
Medek, J., Weishauptová, Z. and Mohyla, I.: Textural changes in coal after reduction with lithium in ethylenediamine, 1533
Meguro, K.: see Kawai, T., 1615
Meuzelaar, H. L. C.: see Harper, A. M., 793
Meuzelaar, H. L. C., Harper, A. M., Hill, G. R. and Given P. H.: Characterization and classification of Rocky Mountain coals by Curie-point pyrolysis mass spectrometry, 640
Miller, R. L.: see Silver, H. F., 872
Milosavljevic, M.: see Bombaugh, K. J., 505
Minges, R.: see Adler, J., 1397
Minges, R.: see Huttinger, K. J., 9
Mirza, S. B.: see Sharma, D. K., 1329
Mitra, J. R., see Mukherjee, D. K., 722
Mochida, I., Korai, Y., Fujitsu, H., Takeshita, K., Komatsubara, Y., Koba, K.-I. and Marsh, H.: Aspects of gasification and structure in cokes from coals, 136
Mochida, I., Shimohara, T., Korai, Y. and Fujitsu, H.: Carbonization of coals to produce anisotropic cokes. 5. Structural factors of coals influencing carbonization properties, 847
Mochida, I.: see Komatsubara, Y., 1738
Moghaddam, A. Z. and Rees, G. J.: Thermal decomposition of potassium permanganate thermogravimetry, differential scanning calorimetry and hot-stage microscopy studies, 653
Mohyla, I.: see Medek, J., 1533
Moliner, R.: see Ibarra, J. V., 373
Mondragon, F., Itoh, H. and Ouchi, K.: Coal liquefaction by *in-situ* hydrogen generation. 1. Zinc–water–coal reaction, 968
Mondragon, F., Kamoshita, R., Katoh, T., Itoh, H. and Ouchi, K.: Coal liquefaction by the hydrogen produced from methanol: 2. Model compound studies, 579
Mondragon, F. and Ouchi, K.: Coal liquefaction by *in-situ* hydrogen generation. 2. Zinc–water model compound reactions, 973
Mondragon, F. and Ouchi, K.: New method for obtaining the distillation curves of petroleum products and coal-derived liquids using a small amount of sample, 61
Mondragon, F.: see Iwate, K., 1528
Montano, P. A.: see Ogawa, T., 1660
Moon, W. G.: see King Jr., W. E., 178, 1143
Moreno-Castilla, C.: see Rodriguez-Reinoso, F., 1089
Moriya, K.: see Aiura, M., 1138
Morooka, S., Murakami, A., Kusakabe, K., Kato, Y. and Kusunoki, K.: Anodic oxidation of coal slurries in flow-through packed bed electrodes, 947
Mossadegh, R.: see Moynihan, C. T., 378
Moulijn, J. A., Cerfontain, M. B. and Kapteijn, F.: Mechanism of the potassium catalysed gasification of carbon in CO_2, 1043
Moulijn, J. A.: see Kapteijn, F., 1036
Moulijn, J. A.: see Wigmans, T., 870
Moynihan, C. T., Mossadegh, R. and Bruce, A. J.: Determination of the mass fraction of crystals in partly frozen hydrocarbon fuels, 378
Moxon, N. T.: see Boyapati, E., 551
Mraz, T., Rosenvold, R., DuBow, J. and Rajeshwar, K.: Acid dissolution of mineral matrix in Green River oil shale. 2. Effect of ultrasonic field, 927
Mraz, T.: see Rajeshwar, K., 920
Mukherjee, D. K. and Mitra, J. R.: Catalytic roles of iron and hydrogen sulphide on hydrogenation of coal, 722
Mulik, P. R.: Correlating NO_x, smoke and wall temperature for a coal liquid and shale oil in a subscale combustion turbine burner, 1731
Mulligan, M. J.: see Bartle, K. D., 1556
Murakami, A.: see Morooka, S., 947
Murase, K., Jackson, W. R., Larkins, F. P., Marshall, M. and Watkins, I. D.: Hydrogenation of brown coal: 5. A study of coal-derived materials as vehicles for brown coal hydroliquefaction reactions, 1694
Murgia, E.: see Sanchez, V., 612
Myers, M. N.: see Graff, K. A., 621

Nakao, Y., Yokoyama, S., Maekawa, Y. and Kaeriyama, K.: Coal liquefaction by colloidal iron sulphide catalyst, 721
Nandi, B. N.: see Ripmeester, J. A., 522
Narita, H.: see Yoshida, T., 282
Neoh, K. G. and Gannon, R. E.: Coal volatile yield and element partition in rapid pyrolysis, 1347
Newman, J. O. H.: see Fynes, G., 897
Ng, S. H., Fung, D. P. C. and Kim, S. D.: Some physical properties of Canadian coals and their effects on coal reactivity, 1564
Nguyen, Q. C.: see Ross, D. S., 1206, 1211
Nieh, H.-r., Guo, S.-c., Zhao, S.-c., Lin, Q. and Chui, Z.-d.: Rapid pyrolysis of brown coal and oil shale, 767
Nieskens, M. P. J. C., Grootveld, G., Sie, S. T. and Heitz, W. L.: Laboratory-scale coal reactivity testing for entrained gasification, 205
Nietfeld, G.: see Lazarov, L., 952
Noel, F.: Alternative to the Conradson carbon residue test, 931
Nordon, P. and Bainbridge, N. W.: Distribution of free gaseous oxygen in coal stockpiles, 943
Northrup, J.: see Solash, J., 217
Nozawa, T.: see Ohtsuka, Y., 1363
Nuttall, H. E.: see Thakur, D. S., 401

Oates, W. A.: see Boyapati, E., 551
Ocampo, A.: see Schrodt, J. T., 1523
Odoerfer, G. A.: see Derbyshire, F. J., 56
Ogawa, T., Stenberg, V. I. and Montano, P. A.: Hydrocracking of diphenylmethane: roles of H_2S, pyrrhotite and pyrite, 1660
Ogino, Y.: see Ozawa, S., 719
Ohtsuka, Y., Nozawa, T., Tomita, A., Tamai, Y. and Hatano, M.: Application of high-field, high-resolution ^{13}C CP/MAS n.m.r. spectroscopy to the structural analysis of Yallourn coal, 1363
Okada, K.: see Shibaoka, M., 169
Okutani, T., Yokoyama, S. and Maekawa, Y.: Viscosity changes in coal paste during hydrogenation, 164
Olah, G. A., Bruce, M. R., Edelson, E. H. and Husain, A.: Superacid coal chemistry. 1. HF:BF_3 catalysed depolymerization–ionic hydroliquefaction of coals under mild conditions, 1130
Olah, G. A. and Husain, A.: Superacid coal chemistry. 2. Model compound studies under conditions of HF:BF_3:H_2 catalysed mild coal liquefaction, 1427
Olah, G. A., Bruce, M. R., Edelson, E. H. and Husain, A.: Superacid coal chemistry. 3. Electrophilic substitution of coals under 'stable ion' conditions and the conversion of functionalized coals with the HF:BF_3:H_2 liquefaction system, 1432
Orfão, J. J. M.: see Figueiredo, J. L., 1059
Osborn, P. R.: see Fredericks, P. M., 139
Otake, Y.: see Starsinic, M., 1002
Ōtani, S.: see Öya, A., 747, 1547
Otto, K., Sorek, H., Bartosiewicz, L. and Shelef, M.: Effects of catalyst addition to coal on CO_2 adsorption kinetics of coal and char, 477
Ottrey, A. L.: see Aikin, T. L. H., 1269
Ouchi, K., Ibaragi, S., Kobayashi, A., Makino, K. and Itoh, H.: Reactivity of coals in hydrogenation, 427

Ouchi, K., Ibaragi, S., Kobayashi, A., Tanimoto, K., Makabe, M., Itoh, H., Matsubara, K. and Takekawa, T.: Effect of blending on liquefaction of coals, 78
Ouchi, K., Maeda, Y., Itoh, H. and Makabe, M.: Effect of air oxidation on coal hydrogenation, 35
Ouchi, K., Makabe, M., Yoshimoto, I. and Itoh, H.: Coking reaction in hydrogenation, 449
Ouchi, K.: see Iwata, K., 1528
Ouchi, K.: see Mondragon, F., 61, 579, 968, 973
Ouchi, K.: see Yoshimoto, I., 978
Oudin, J.-L.: see Boudou, J.-P., 1508
Overbeek, J. M.: see Kershaw, J. R., 1174
Owen, M. J. and Swihart, T. J.: XPS investigation of the dewatering of fine coal using silicone additives, 129
Ōya, A., Akuzawa, K. and Ōtani, S.: Mineral matter effects on air oxidation of cokes from a coking coal, 1547
Oya, A. and Marsh, H.: Co-carbonization of coking coal with K_2CO_3: structure of the resulting chars, 875
Ōya, A., Takabatake, M., Ōtani, S. and Marsh, H.: Carbons formed catalytically by nickel in phenolic resin carbon. Oxidation by Simon's reagent and HNO_3–H_2SO_4, 747
Ozawa, S., Matsuura, M., Matsunaga, S.-i. and Ogino, Y.: Kinetics and reaction scheme of coal liquefaction over molten tin catalyst, 719

Pahl, T. R.: see Schirmer, R. E., 368
Painter, P. C.: see Riesser, B., 1253
Painter, P. C.: see Senftle, J. T., 245
Painter, P. C.: see Sobkowiak, M., 1245
Painter, P. C.: see Starsinic, M., 1002
Palmer, C. A. and Filby, R. H.: Distribution of trace elements in coal from the Powhatan No. 6 mine, Ohio, 318
Papirer, E.: see Siffert, B., 834
Patil, M. D., Eaton, H. C. and Tittlebaum, M. E.: ^{57}Fe Mössbauer spectroscopic studies of fly ash from coal-fired power plants and bottom ash from lignite-natural gas combustion, 788
Pelroy, R. A.: see Wilson, B. W., 46
Petela, R.: Exergetic analysis of atomization process of liquid, 419
Petela, R.: Exergetic efficiency of comminution of solid substances, 414
Petrakis, L.: see Allen, D. T., 803
Petrakis, L.: see Jeong, K. M., 1459
Picq, G., Reeves, R. M., Ribourg, P. and Vennereau, P.: Interaction of glassy carbon with electrolyte and hydrogen, and the influence of these processes on the emission of electrons, 1107
Pilbrow, J. R.: see Dack, S. W., 39
Poirier, M.-A. and Das, B. S.: Characterization of polynuclear aromatic hydrocarbons in bitumen, heavy oil fractions boiling above 350°C by g.c.-m.s., 361
Polat, S. and Harris, I. J.: Low-temperature oxidation of Victorian brown coal, 669
Polikar, M.: see Wallace, D., 862
Pope, C. G.: Lignite porosity study by kinetics of gas adsorption, 1681
Popovic, S.: see Valkovic, V., 1357
Poynton, H. J.: see McCarthy, D. J., 769
Prasad, S. N.: see Agarwal, P. K., 1020
Pratap, R.: see Kong, R. C., 702
Prins, R.: see de Beer, V. H. J., 1095
Przybtwicz, W.: see Kreft, A., 1281
Pugmire, R. J.: see Alemany, L. B., 513
Pugmire, R. J.: see Dalling, D. K., 525
Puschmann, K.: see Lazarov, L., 952

Qian, S.-A., Li, C.-F. and Zhang, P.-Z.: Study of structural parameters on some petroleum aromatic fractions by ^{1}H n.m.r./i.r. and ^{13}C, ^{1}H n.m.r. spectroscopy, 268
Qian, Z. and Marsh, H.: Co-carbonization of oxidized coals with pitches and decacyclene, 1588
Qian, Z.: see Marsh, H., 1594
Quon, D. H. H., Wang, S. S. B. and Chen, T. T.: Viscosity measurements of slags from pulverized western Canadian coals in a pilot-scale research boiler, 939

Radomyski, B. and Szczygieł, J.: Mathematical analysis of the kinetics of hydrogenating depolymerization of benzene-insoluble coal extract fraction in the absence of catalyst, 744
Radomyski, B. and Szczygieł, J.: Statistical and mathematical analysis of the catalytic hydrogenating depolymerization of benzene-insoluble coal extract fraction, 1687
Radovic, L. R., Walker Jr., P. L. and Jenkins, R. G.: Catalytic coal gasification: use of calcium *versus* potassium, 1028
Ragan, S. and Goodarzi, F.: Disclinations in the optical texture of a high-rank vitrinite coke and a petroleum needle-coke, 1382
Rajendran, G. and Jain, S. R.: Novel solid hypergolic fuels for hybrid propellants, 709
Rajeshwar, K., Mraz, T., Rosenvold, R. and DuBow, J.: Acid dissolution of mineral matrix in Green River oil shale, 920
Rajeshwar, K.: see Mraz, T., 927
Rantell, T. D.: see Clarke, J. W., 1476
Rao, T. C.: see Vanangamudi, M., 738
Rash, D.: see Agnew, J. B., 147
Ratto, J. J.: see Skowronski, R. P., 440
Rayner-Canham, G. W. and Dickerhoof, D. W.: Elucidation of the iron chloride–clay system for removal of nitrogen-containing compounds from petroleum and shale-oil distillates, 1472
Rebollar, M.: see Ibarra, J. V., 1743
Rees, G. J.: see Moghaddam, A. Z., 653
Reeves, R. M.: see Picq, G., 1107
Reisser, E.: see Sobkowiak, M., 1245
Retima, A., Voorhees, K. J. and Guffey, F. D.: Characterization of the highest optically active fraction of shale oil, 310
Reuther, J. J., Daley, R. D., Warchol, J. J. and Withum, J. A. Coal volatiles combustion–coal pyrolysis analogy: observation of 'low' apparent global activation energies, 604
Reuther, J. J.: see Warchol, J. J., 1491
Rhoads, C.: see Senftle, J. T., 245
Ribourg, P.: see Picq, G., 1107
Riepe, W. and Steller, M.: Characterization of coal and coal blends by automatic image analysis: use of the Leitz texture analysis system, 313
Riesser, B., Starsinic, M., Squires, E., Davis, A. and Painter, P. C.: Determination of aromatic and aliphatic CH groups in coal by FT-i.r. 2. Studies of coals and vitrinite concentrates, 1253
Rigby, N.: see Evans, J. C., 1471
Rimstidt, J. D.: see Ingram, G. R., 292
de Rincón, A. R.: see Boehm, H. P., 1061
Ripmeester, J. A., Couture, C., MacPhee, J. and Nandi, B. N.: ^{1}H n.m.r. relaxation in bituminous coal and semicoke, 522
Robbat, A., Finseth, D. H. and Lett, R. G.: Organic titanium in coal and the deposition of titanium on direct liquefaction catalysts: an alternative view, 1710
Roberts, R. M. and Sweeney, K. M.: Low-temperature pyrolysis of Texas lignite, basic extracts and some related model compounds, 904
Rodriguez-Ramos, I.: see Rodriguez-Reinoso, F., 1089
Rodriguez-Reinoso, F., López-González, J. D., Moreno-Castilla, C., Guerrero-Ruiz, A. and Rodriguez-Ramos, I.: Porous carbon as support for iron and ruthenium catalysts, 1089
Rogers, D. E.: Differential thermal analysis of lignite hydrogenation, 1610
Rogers, D. E.: see Agnew, J. B., 147
Romero, C.: see Martinez, M. T., 692
Rose, G. R., Zabransky, R. F., Stock, L. M., Huang, C. B., Srinivas, V. R. and Tse, K.: The preparation and pyrolysis of O- and C-benzylated Illinois No. 6 coal, 1339
Rosenvold, R.: see Mraz, T., 927
Rosenvold, R.: see Rajeshwar, K., 920
Ross, D. S., Blessing, J. E., Nguyen, Q. C. and Hum, G. P.: Conversion of bituminous coal in CO/H_2O systems. 2. pH Dependence, 1206
Ross, D. S., Nguyen, Q. C. and Hum, G. P.: Conversion of bituminous coal in CO/H_2O systems. 3. Soluble metal catalysis, 1211
Rowlands, C. C.: see Evans, J. C., 1471
Ruberto, R. G.: see Cronauer, D. C., 71
Rubio, B.: see Mastral, A. M., 355
Rudnick, L. R. and Tueting, D.: Investigation of free radicals produced during coal liquefaction using ESR, 153
Ruether, J. A.: see Mathur, V. K., 1700
Ruether, J. A.: see Warzinski, R. P., 1619
Ruscic, L.: see Calkins, W. H., 1226
Ruscic, L.: see Dyrkacz, G. R., 1166, 1367
Ryan, T. A. and Stacey, M. H.: A novel reaction catalysted by active carbons. Production of dichloromethane from phosgene and formaldehyde, 1101
Rybak, W., Karcz, H. and Zembrzuski, M.: Evaluation of intrinsic kinetic parameters of coal combustion, 488

Salim, S. S. and Bell, A. T.: Effects of Lewis acid catalysts on the hydrogenation and cracking of three-ring aromatic and hydroaromatic structures related to coal, 469
Salivin, I.: see Koplick, A. J., 1570
Sams, D. A.: see Hamilton, R. T., 1008
Sanada, Y.: see Yokoyama, S., 984
Sanchez, V., Murgia, E. and Lubkowitz, J. A.: Size exclusion chromatographic approach for the evaluation of processes for upgrading heavy petroleum, 612
Sancier, K. M.: Effects of catalysts and CO_2 gasification on the e.s.r. of carbon black, 679
Sarkar, S.: see Khemani, R. N., 13
Sastri, V. S.: Effect of inorganic corrosion inhibitors on the caking properties of coking coals, 1464
Sato, S.: see Mashimo, K., 1417
Scaroni, A. W.: see de Beer, V. H. J., 1095
Scaroni, A. W.: see Tsai, C.-Y., 866
Schafer, H. N. S.: The determination of carboxyl groups in low-rank coals, 723
Schell, F. M.: see Hagaman, E. W., 915
Schirmer, R. E., Pahl, T. R. and Elliott, D. C.: Analysis of thermochemically-derived wood oil, 368
Schlogl, R.: see Ferguson, E., 1048

Schmidt, P. W.: see Kalliat, M., 1178
Schmitt, K. D. and Sheppard, E. W.: Determination of carbon centre types in solid fuel materials by CP/MAS n.m.r., 1241
Schmitter, J.-M., Ignatiadis, I., Dorbon, M., Arpino, P., Guiochon, G., Toulhoat, H. and Huc, A.: Identification of nitrogen bases in a coker gas oil and influence of catalytic hydrotreatment on their composition, 557
Schmitter, J.-M.: see Dorbon, M., 565
Schrodt, J. T. and Ocampo, A.: Variations in the pore structure of oil shales during retorting and combustion, 1523
Sears, J. T.: see Tamhankar, S. S., 1230
Senftle, J. T., Kuehn, D., Davis, A., Brozoski, B., Rhoads, C. and Painter, P. C.: Characterization of vitrinite concentrates: 3. Correlation of FT-i.r. measurements to thermoplastic and liquefaction behaviour, 245
Senftle, F. E.: see Heard, I., 221
Senftle, F. E.: see Thorpe, A. N., 662
Shabtai, J.: see Dalling, D. K., 525
Shadman, F.: see Hamilton, R. T., 1008
Shafizadeh, F.: see DeGroot, W. F., 210
Shah, Y. T.: see King Jr., W. E., 178
Sharma, D. K. and Mirza, S. B.: Physical mechanism of solvolytic liquefaction of coal through depolymerization: factors leading to reduction in reagent concentration and reaction time, 1329
Shelef, M.: see Otto, K., 477
Sheppard, E. W.: see Schmitt, K. D., 1241
Shibaoka, M., Foster, N. R., Okada, K. and Clark, K. N.: Formation of pyrolytic carbon in a continuous reactor for coal hydrogenation, 169
Shibaoka, M. and Heng, S.: Model for the coal hydrogenation process and its applications, 174
Shibaoka, M., Heng S. and Corcoran, J.: Microscopic investigation of agglomeration of coal hydrogenation residues by secondary vitroplast, 134
Shimohara, T.: see Mochida, I., 847
Shindo, T.: see Amano, A., 718
Shinn, J. H.: From coal to single-stage and two-stage products: a reactive model of coal structure, 1187
Sie, S. T.: see Nieskens, M. P. J. C., 205
Siffert, B., Bourgeois, C. and Papirer, E.: Structure and water–oil emulsifying properties of asphaltenes, 834
Silver, H. F., Corry, R. G., Miller, R. L. and Hurtubise, R. J.: Hydroliquefaction of Kentucky 9/14 coal using bottoms recycle, 872
Silver, H. F.: see Boduszynski, M. M., 93
Simmons, G. W.: see Herman, R. G., 673
Singer, L. S.: see Lewis, I. C., 1478
Sinnige-Nijssen, M. W. A.: see van Bodegom, B., 346
Sjöström, K.: see Lindner, B., 1485
Skowronski, R. P., Ratto, J. J., Goldberg, I. B. and Heredy, L. A.: Hydrogen incorporation during coal liquefaction, 440
Smith, D. M. and Williams, F. L.: Diffusion models for gas production from coal: application to methane content determination, 251
Smith, D. M. and Williams, F. L.: Diffusion models for gas production from coal: determination of diffusion parameters, 256
Smith, D. M. and Williams, F. L.: Direct method of determining the methane content of coal – a modification, 425
Smith, T. D.: see Dack, S. W., 39
Snape, C. E. and Bartle, K. D.: Definition of fossil fuel-derived asphaltenes in terms of average structural properties, 883
Snape, C. E.: see Bartle, K. D., 1556
Snape, C. E.: see Clarke, J. W., 1476
Sobkowiak, M., Reisser, E., Given, P. and Painter, P.: Determination of aromatic and aliphatic CH groups in coal by FT-i.r. 1. Studies of coal extracts, 1245
Sohn, H. Y.: see Ysng, H. S., 1511
Solar, J. M.: see de Beer, V. H. J., 1095
Solash, J., Northrup, J., Burnett, J. C. and Hazlett, R. N.: Oxidation of coal-derived asphaltenes with thallium(III), 217
Solomon, P. R. and King, H.-H.: Tar evolution from coal and model polymers: theory and experiments, 1302
Solomon, P. R.: see Drykacz, G. R., 536
Sood, A.: Heavy media separation of SRC-II feedstocks. 1. Effect on coal properties, 84
Sood, A.: Heavy media separation of SRC-II feedstocks. 2. Effect on liquefaction yields, 1148
Sorek, H.: see Otto, K., 477
Spackman, W.: see Given, P. H., 1655
Spackman, W.: see Tsai, C.-Y., 866
Spears, D. A.: see Caswell, S. A., 774, 782
Speight, J. G., Long, R. B. and Trowbridge, T. D.: Factors influencing the separation of asphaltenes from heavy petroleum feedstocks, 616
Spiro, C. L., McKee, D. W., Kosky, P. G. and Lamby, E. J.: Comparison of effects of adding Boudouard catalysts before and after coal charring, 133
Spiro, C. L., McKee, D. W., Kosky, P. G. and Lamby, E. J.: Observation of alkali catslyst particles during gasification of carbonaceous materials in CO_2 and steam, 686
Squires, E.: see Riesser, B., 1253
Srinivas, V. R.: see Rose, G. R., 1339
Stacey, M. H.: see Ryan, T. A., 1101
Starsinic, M., Otake, Y., Walker Jr., P. L. and Painter, P. C.: Application of FT-i.r. spectroscopy to the determination of COOH groups in coal, 1002
Starsinic, M.: see Riesser, B., 1253
Stein, P.: see Tewari, K. C., 573
Steller, M.: see Riepe, W., 313
Stenberg, V. I.: see Ogawa, T., 1660
Stevens, L. L.: see Green, J. B., 1290
Stewart, I.: see Cleyle, P. J., 1579
Stock, L. M.: see Alemany, L. B., 513
Stock, L. M.: see King, H.-H., 810
Stock, L. M.: see Rose, G. R., 1339
Stoehr, T.: see Boehm, H. P., 1061
Stubington, J. F. and Sumaryono: Release of volatiles from large coal particles in a hot fluidized bed, 1013
Stuiver, H. C. M.: see van Bodegom, B., 346
Stumpp, E.: see Lazarov, L., 952
Sumaryono,: see Stubington, J. F., 1013
Suuberg, E. M.: see Unger, P. E., 606
Suzuki, T., Yamada, O., Fujita, K., Takegami, Y. and Watanabe, Y.: Coal hydroliquefaction using iron pentacarbonyl as a catalyst precursor, 1706
Suzuki, T.: see Watanabe, Y., 752
Sweeney, K. M.: see Roberts, R. M., 904
Swihart, T. J.: see Owen, M. J., 129
Swinkels, D. A. J.: see Fredericks, P. M., 139
Szczygiel, J.: see Radomyski, B., 744, 1687

Takabatake, M.: see Ōya, A., 747
Takayasu, M.: see Jeong, K. M., 1459
Takegami, Y.: see Suzuki, T., 1706
Takegami, Y.: see Watanabe, Y., 752
Takekawa, T.: see Ouchi, K., 78
Takeshita, K.: see Mochida, I., 136
Tamai, Y.: see Ohtsuka, Y., 1363
Tamhankar, S. S., Sears, J. T. and Wen, C. Y.: Coal pyrolysis at high temperatures and pressures, 1230
Taneja, S. P. and Jones, C. H. W.: Mössbauer studies of iron-bearing minerals in coal and coal ash, 695
Tanimoto, K.: see Ouchi, K., 78
Tao, F. F. and Billimora, R.: Interrelationship of chemical characterization and rheological behaviour of coal liquefaction bottoms, 158
Tarki, H. T., Kiennemann, A. and Chornet, E.: Enhanced reactivity of metal-impregnated peat char and semicoke during gas phase hydrogenolysis, 30
Taylor, L. T.: see Hellgeth, J. W., 453, 961
Taylor, N.: see Bartle, K. D., 1556
Tereczki, B.: see Boehm, H. P., 1061
Tewari, K. C., Stein, P. and Li, N. C.: Heats of interaction between coal–liquid fractions and acids or bases. Application of the Bolles–Drago approach to mixtures, 573
Thakur, D. S., Wilkins, E. S. and Nuttall, H. E.: Thermal degradation of shale oils: 1. Kinetics of vapour phase oil degradation, 401
Thewlis, P.: see Agnew, J. B., 147
Thomas, K. M.: see Johnson, C. A., 1073
Thompson, R. D.: see Kong, R. C., 702
Thorpe, A. N., Senftle, F. E., Alexander, C. C. and Dulong, F. T.: Oxidation of pyrite in coal to magnetite, 662
Timmner, J. M. and van der Burgh, N.: Automated determination of organic sulphur in coal: use of scanning electron microscopy and energy dispersive X-ray microanalysis, 1645
Tittlebaum, M. E.: see Patil, M. D., 788
Tokuhashi, K.: see Yoshida, T., 282
Tominaga, Y.: see Kong, R. C., 702
Tomita, A.: see Ohtsuka, Y., 1363
Toulhoat, H.: see Dorbon, M., 565
Toulhoat, H.: see Schmitter, J.-M., 557
Triolo, R. and Child, H. R.: Small-angle neutron scattering study of coal extract solutions in pyridine, 274
Triolo, R.: see Collins, C. J., 1202
Trowbridge, T. D.: see Speight, J. G., 616
Tsai, C.-Y., Chiu, Y.-F., Spackman, W. and Scaroni, A. W.: Correlation of microstrength and industrial drum strength indices of metallurgical cokes, 866
Tsai, S. C. and Lumpkin, R. E.: Oil shale beneficiation by froth flotation, 435
Tse, K.: see Rose, G. R., 1339
Tseng, H. P. and Edgar, T. F.: Identification of the combustion behaviour of lignite char between 350 and 900°C, 385
Tsuchiya, H.: see Mashimo, K., 1417
Tueting, D.: see Rudnick, L. R., 153
Turnbull, A. G.: see Linton, M., 408
Tyler, R. J.: see Calkins, W. H., 1119
Tyler, R. J.: see Cliff, D. I., 394
Tyrer, J. D.: see Clark, P. D., 125

Umematsu, J.: see Yokoyama, S., 984
Unger, P. E. and Suuberg, E. M.: Molecular weight distributions of tars produced by flash pyrolysis of coals, 606
Utz, B. R., Appell, H. R. and Blaustein, B. D.: Solubility characterization of coal-derived products using pressure filtration, 1671

Valkovic, V., Makjanic, J., Jaksic, M., Popovic, S., Box, A. J. J., Vis, R.,

Wiederspahn, K. and Verheul, H.: Analysis of fly ash by X-ray emission spectroscopy and proton microbeam analysis, 1357
Vanangamudi, M. and Rao, T. C.: Kinetic study of agglomerate growth in coal–oil agglomeration process, 738
VanderSande, J. B.: see Allen, R. M., 24
Varde, K. S.: Bulk modulus of vegetable oil – diesel fuel blends, 713
Vasilakos, N. P. and Clinton, C. S.: Chemical beneficiation of coal with aqueous hydrogen peroxide/sulphuric acid solutions, 1561
Vassallo, A. M.: Fate of ^{13}C-labelled alkyl groups on reductively alkylated Liddell coal during hydrogenation at 400°C, 1236
Vassallo, A. M. and Wilson, M. A.: Cross-polarization n.m.r. as a tool to investigate solvent–coal molecular interactions, 571
Vecchi, C.: see Cardillo, P., 1518
van Veen, J. A. R.: see van Bodegom, B., 346
Vennereau, P.: see Picq, G., 1107
Verheul, H.: see Valkovic, V., 1357
Verheyen, T. V., Johns, R. B., Bryson, R. L., Maciel, G. E. and Blackburn, D. T.: A spectroscopic investigation of the banding or lithotypes occurring in Victorian brown coal seams, 1629
Vis, R.: see Valkovic, V., 1357
Vit, I.: see Koplick, A. J., 1570
de Vlieger, J. J., Kieboom, A. P. G. and van Bekkum, H.: Behaviour of tetralin in coal liquefaction: examination in long-run batch-autoclave experiments, 334
Volker, E. J. and Bockrath, B. C.: Effect of cresol as a co-solvent in coal liquefaction and product analysis, 285
Vollhardt, K. P. C.: see Lai, Y.-H., 231
Voorhees, K. J.: see Retima, A., 310
Vranos, A. and Liscinsky, D. S.: Thermal decomposition of SRC-II middle distillate under surface vaporizing conditions, 185

Wailes, P. C.: see Koplick, A. J., 1570
Wainai, T.: see Mashimo, K., 1417
Walker Jr., P. L.: see Hengel, T. D., 1214
Walker Jr., P. L.: see Radovic, L. R., 1028
Walker Jr., P. L.: see Starsinic, M., 1002
Walker, R. J.: see Klinzing, G. E., 1450
Wallace, D.: A comparison of methods for determining the specific gravity of heavy crudes, 864
Wallace, D., Polikar, M. and Ferracuti, F.: Preparation of bitumen from oil sand by centrifugation, 862
Wang, S. S. B.: see Quon, D. H. H., 939
Warchol, J. J. and Reuther, J. J.: Activation energy for soot formation by C_2-hydrocarbon/air flames, 1491
Warchol, J. J.: see Reuther, J. J., 604
Ward, R. L. and Burnham, A. K.: Identification by ^{13}C n.m.r. of carbon types in shale oil and their relation to pyrolysis conditions, 909
Warzinski, R. P. and Ruether, J. A.: Fractional destraction of coal-derived materials, 1619
Watanabe, Y., Yamada, O., Fujita, K., Takegami, Y. and Suzuki, T.: Coal liquefaction using iron complexes as catalysts, 752
Watanabe, Y.: see Suzuki, T., 1706
Watkins, I. D.: see Murase, K., 1694
Watson, N. C.: A modified Gray–King assay method for small oil shale samples, 1455
Webster, D. S.: see Barton, W. A., 1262
Weerasinghe, C. R.: see Kandiyoti, R., 1583
Weishauptová, Z.: see Medek, J., 1533
Weiss, R. G.: see Foster, N. R., 66, 716
Weller, M. and Wert, C.: Cross-linking of macromolecules in coal, 891
Weller, S. W.: see Chien, P. L., 878
Wen, C. Y.: see Tamhankar, S. S., 1230
Wender, I.: see Deshpande, G. V., 956
Wert, C.: see Weller, M., 891
White, R.: see Agnew, J. B., 147
Whitehurst, D. D.: see Derbyshire, F. J., 56
Whiteway, S. G.: see Cleyle, P. J., 1579
Wieckowska, J.: Some aspects of the carbonization of vacuum distillation residue from crude oil, 202
Wieckowski, A. B.: see Duber, S., 1474, 1641
Wiederspahn, K.: see Valkovic, V., 1357
Wigmans, T., Haringa, H. and Moulijn, J. A.: Role of the influence of potassium during pyrolysis of medium volatile coal, 870
Wilkins, E. S.: see Thakur, D. S., 401
Wilkinson, H. C.: Correspondence between the composition and plastic properties of British coals and the structural properties and reactivity of the corresponding cokes, 101
Williams, F. L.: see Smith, D. M., 251, 256, 425
Wilson, B. W., Pelroy, R. A., Mahlum, D. D., Frazier, M. E., Later, D. W. and Wright, C. W.: Comparative chemical composition and biological activity of single- and two-stage coal liquefaction process streams, 46
Wilson, M. A.: see Vassallo, A. M., 571
Wilson, M. F. and Kriz, J. F.: Upgrading of middle distillate fractions of a syncrude from Athabasca oil sands, 190
Winans, R. E.: see King, H.-H., 341
Wise, H.: see Wood, B. J., 1600
Withum, J. A.: see Reuther, J. J., 604
Wolf, E. E.: see Amestica, L. A., 227
Wolf, E. E.: see Yuh, S. J., 1604
Wood, B. J., Flemming, R. H. and Wise, H.: Reactive intermediate in the alkali-carbonate-catalysed gasification of coal char, 1600
Woodward, P. W.: see Green, J. B., 1290
Wozniak, J.: see Kreft, A., 1281
Wright, C. W.: see Wilson, B. W., 46

Yaggi, N. F.: see Li, N. C., 1285
Yaggi, N. F.: see Young, L.-J. S., 593
Yamada, M.: see Amano, A., 718
Yamada, O.: see Suzuki, T., 1706
Yamada, O.: see Watanabe, Y., 752
Yan, B.: see Gao, G., 1552
Yang, H. S. and Sohn, H. Y.: Kinetics of oil generation from oil shale from Liaoning province of China, 1511
Yang, L.: see Gao, G., 1552
Yokoyama, S., Umematsu, J., Inoue, K., Katoh, T. and Sanada, Y.: Estimation of compound classes in coal hydrogenation liquids by thin-layer chromatography, 984
Yokoyama, S.: see Nakao, Y., 721
Yokoyama, S.: see Okutani, T., 164
Yoshida, T., Tokuhashi, K., Narita, H., Hasegawa, Y. and Maekawa, Y.: Determination of ether oxygen in coals by ^{13}C CP/MAS n.m.r. spectrometry and acetylation, 282
Yoshimoto, I., Itoh, H., Makabe, M. and Ouchi, K.: Pressure and temperature effects on the hydrogenation of coal-derived asphaltene, 978
Yoshimoto, I.: see Ouchi, K., 449
Young, L.-J. S., Hara, T. and Li, N. C.: Hydrogen bonding of the acid and base fractions separated from SRC II middle distillates, 816
Young, L.-J. S., Yaggi, N. F. and Li, N. C.: Effect of various phenol additives on viscosity of SRC blends, 593
Young, M. M.: see Foster, N. R., 66, 716
Yuh, S. J. and Wolf, E. E.: Kinetic and FT-i.r. studies of the sodium-catalysed steam gasification of coal chars, 1604

Zabransky, R. F.: see Rose, G. R., 1339
Zeldes, H.: see Calkins, W. H., 1113
Zembrzuski, M.: see Rybak, W., 488
Zhang, P.-Z.: see Qian, S.-A., 268
Zhao, S.-c.: see Nieh, H.-r., 767
Zingaro, R. A.: see Mallya, N., 423
Zoeller, J.: see Given, P. H., 1655

Classified Contents

Acetylation, determination of ether oxygen in coals by ^{13}C CP/MAS n.m.r. spectrometry and, 282
Acid concentrate, separation of liquid fossil fuels into, 1290
–dissolution of mineral matrix in oil shale, 920, 927
–fractions from distillates, H bonding of, 816
–interaction with coal–liquid fractions, Bolles–Drago approach to mixtures, 573
Activation energies, coal volatiles combustion-coal pyrolysis analogy: observation of 'low' apparent global, 604
–for soot formation by C_2-hydrocarbon/air flames, 1491
–weighted mean, reactivity assessment of coals via, 1436
Aliphatic CH groups, determination of, in coal, 1245, 1253
Alkali catalyst particles, observation of, during gasification, 686
–treatment, effect of, on the caking properties of coal, 13
Alkyl aryl ethers in lignite solubilization, 1422
Alkylated, reductively, coal, fate of alkyl groups, during hydrogenation, 1236
Alkylation, reductive, coal products, 513
Alumina supported catalysts, 1095
Aluminium trichloride, reaction of benzene and other hydrocarbons with: Effect of catalytically activated hydrogen, studies on the, 231
Anatase, formation of, from titanium (IV) preasphaltene complexes under coal liquefaction conditions, 280
Anisotropic cokes, carbonization of coals to produce, 847
Anthracite, chemical oxidation of, with hydrogen peroxide via the Fenton reaction, 221
–coal, e.p.r. studies of outburst-prone, 1471
Aromatic CH groups, determination of, in coal, 1245, 1253
Ash, brown coal, and fireside deposits, Mössbauer analysis of iron phases in, 1269
–characteristics of high-carbon fluidized bed, 499
–coal, sintering of, relevant to pulverized coal utility boilers, 1664
–coal gasifier, comparison of leachable trace element levels in, with levels in power plant ash, 505
––Mössbauer studies of iron-bearing minerals in coal and, 695
–fly, analysis of, by X-ray emission spectroscopy and proton microbeam analysis, 1357
––from coal-fired power plants, ^{57}Fe Mössbauer studies of, 788
–from lignite-natural gas combustion, ^{57}Fe Mössbauer studies of, 788
Asphaltenes, coal-derived, oxidation of, with thallium(III), 217
–coal-derived, pressure and temperature effects on the hydrogenation of, 978
–comparison of g.p.c. elution characteristics and diffusion coefficients of, 530
–components, structural study of, by hydrogenolysis. Constitution of tars from flash pyrolysis of Australian coals, 1570
–fossil fuel-derived, definition of, in terms of average structural properties, 883
–from heavy petroleum feedstocks, factors influencing the separation of, 616
–petroleum, acid–base characteristics of, as studied by non-aqueous potentiometric titrations, 197
–structure and water–oil emulsifying properties of, 834
Atomization of liquid, exergetic analysis of, 419

Bacterial removal of pyrite from coal, 297
Base concentrate, separation of liquid fossil fuels into, 1290
–fractions from distillates, H bonding of, 816
–interaction with coal–liquid fractions, Bolles–Drago approach to mixtures, 573
Beneficiation of coal, chemical, with aqueous hydrogen peroxide/sulphuric acid solutions, 1561
–oil shale, by flotation, 435
Benzene insoluble coal extract fraction, kinetics of hydrogenating depolymerization of, in the absence of catalyst, 744
–reaction of, and other hydrocarbons, with aluminium trichloride, 231
Benzylated coal, pyrolysis of, 1339
Bibenzyl, high temperature hydrogenolysis of, 857
Biological activity of single- and two-stage coal liquefaction process streams, 46
Biomass, analysis of chemical intermediates from, low-temperature steam gasification of, 4
Bitumen, Athabasca, effect of low-temperature oxidation on the composition of, 858
–characterization of polynuclear aromatic hydrocarbons in, heavy oil fractions boiling above 350°C by g.c.-m.s., 361
–extracted from Italian bituminous rocks and shales, characteristics of, 1518
–preparation of, from oil sand by centrifugation, 862
–Utah tar sand, viscous characteristics of, 1312
–visbreaker and straight-run, 1515
Bituminous coal, conversion of, in CO/H_2O systems 2. pH Dependence, 1206
–conversion of, in CO/H_2O systems 3. Soluble metal catalysis, 1211
–excited triplet states in, 1474
–flotation and sulphur selectivity of, with different degrees of oxidation, 1466
–reactions of a, with metal chlorides in carbon tetrachloride, 952
Bituminous rocks and shales, Italian, characteristics of bitumens extracted from, 1518
–vitrinite, aspects of the molecular structure of. N.m.r. study of the effects of imbibed pyridine, 1262
Blending, effect of, on liquefaction of coals, 78
Bond cleavage reactions of diphenylalkanes and related ethers, 810
Book reviews, 287, 727, 1480, 1624
Boudouard catalysts: *see* catalysts
Brown coal, and oil shale, rapid pyrolysis of, 767
–ash and fireside deposits, Mössbauer analysis of iron phases in, 1269
–hydrogenation of, 1694
–in the temperature range 400–2300°C, products from rapid heating of a, 394
–soft, integrated instrumental analysis of, 1281
–Victorian, free-radical involvement in the drying and oxidation of, 39
––hydroliquefaction of, in a continuous reactor: 1. Effects of residence time, temperature and catalysts on conversion, 147
––low-temperature oxidation of, 669

Caking properties of coal, effect of alkali treatment on, 13
–of coking coals, effect of inorganic corrosion inhibitors on, 1464
Calcium catalysis of lignite char gasification, 1214
–use of, *versus* potassium in coal gasification, 1028
Calcium silicates, formation of, during processing of Julia Creek oil shale, 769
Capillary flow of liquid pitch, 1677
Carbazoles and benzocarbazoles, identification of, in a coker gas oil and influence of catalytic hydrotreatment on their distribution, 565
Carbon, activated, catalytic oxidation of hydrogen sulphide on, 1064
–active, a novel reaction catalysed by. Production of dichloromethane from phosgene and formaldehyde, 1101
–and alumina supported catalysts, hydrodesulphurization activity and coking propensity of, 1095
–as a catalyst in oxidation reactions and hydrogen halide elimination reactions, 1061
–centre types in solid fuel materials by CP/MAS n.m.r., determination of, 1241
–CO_2 gasification of, catalysed by alkali metals. Reactivity and mechanism, 1036
–deposits on catalysts, applications of Raman microprobe spectroscopy to the characterization of, 1073
–formed catalytically by nickel in phenolic resin carbon. Oxidation by Simon's reagent and HNO_3–H_2SO_4, 747
––on nickel surfaces, characterization of, 1081
–glassy, interaction of, with electrolyte and hydrogen, and the influence of these processes on the emission of electrons, 1107
–porous, as support for iron and ruthenium catalysts, 1089
–potassium catalysed CO_2 gasification of, 1043
–pyrolytic, formation of, in a continuous reactor for coal hydrogenation, 169
–types in shale oil, ^{13}C n.m.r. of, 909
–water vapour gasification of, 1393, 1397
Carbon black, effects of catalysts and CO_2 gasification on the e.s.r. of, 679
Carbon dioxide gasification of carbon, catalysed by alkali metals, 1036

--of carbon, mechanism of K catalysed, 1043
--of coal char, potassium-catalysed, 1008
-kinetics of the gasification of chars by, 210
Carbon fibre (PAN-ACF), for reduction of NO with ammonia, 1738
Carbon monoxide/water systems, conversion of bituminous coal in, 1206, 1211
Carbon residue test, Conradson, alternative to the, 931
Carbon-13 n.m.r.: *see* Instrumental methods of analysis
Carbonization of binderless briquettes, properties and potential of formed cokes derived from Turkish lignites by, 1221
-of coals to produce anisotropic cokes. 5. Structural factors of coals influencing carbonization properties, 847
-of vacuum distillation residue from crude oil, some aspects of, 202
-*see also* Co-carbonization
Carboxyl groups, determination of, in coal, 1002
-in low-rank coals, the determination of, 723
Carboxylic acids in Green River oil shale, extractable metal salts of, 303
Catalysis, alkali-carbonate-catalysed gasification of coal char, 1600
-by alkali metals, of CO_2 gasification of carbon, 1036
-by sulphided cobalt-molybdate, hydrogenation of pyrenes, 463
-carbons formed catalytically by nickel in phenolic resin carbon, 747
-HF:BF_3 of depolymerization–ionic hydroliquefaction of coals under mild conditions, 1130
-of lignite char gasification by exchangeable calcium and magnesium, 1214
-of mild coal liquefaction, 1427
-potassium-catalysed CO_2 gasification of coal char, variation of rate during, 1008
--, of CO_2 gasification of carbon, mechanism of, 1043
-reaction catalysed by active carbons. Production of dichloromethane from phosgene and formaldehyde, 1101
-sodium-catalysed steam gasification of coal chars, 1604
-soluble metal. Conversion of bituminous coal in CO/H_2O systems, 1211
Catalyst addition to coal, effects of, on CO_2 adsorption kinetics of coal and char, 477
-applications of Raman microprobe spectroscopy to the characterization of carbon deposits on, 1073
-, Boudouard comparison of effects of adding, before and after coal charring, 133
-carbon, in oxidation and hydrogen halide elimination reactions, 1061
-coal liquefaction using iron complexes as, 752
-colloidal iron sulphide, coal liquefaction by, 721
-dispersed iron or molybdenum, effect of sulphur on coal liquefaction in the presence of, 329
-effects of, and CO_2 gasification on the e.s.r. of carbon black, 679
-for water vapour gasification of carbon, mixtures of potassium sulphate and iron sulphate as. 1. Kinetic studies, 1393
-for water vapour gasification of carbon, mixtures of potassium sulphate and iron sulphate as 2. Wettability phenomena and reactions of the catalyst precursors, 1397
-hydrodesulphurization activity and coking propensity of carbon and alumina supported, 1095
-hydroliquefaction of Victorian brown coal in a continuous reactor, effect of, on conversion, 147
-iron and ruthenium, porous carbon as support for, 1089
-Lewis acid, effects of, on the hydrogenation and cracking of three-ring aromatic and hydroaromatic structures related to coal, 469
-liquefaction, effects of organic titanium on, 1710
-mathematical analysis of the kinetics of hydrogenating depolymerization of benzene-insoluble coal extract fraction in the absence of, 744
-molten tin, kinetics and reaction scheme of coal liquefaction over, 719
-particles, observation of alkali, during gasification of carbonaceous materials in CO_2 and steam, 686
-polyborane-derived metal borides. 1. Hydrodesulphurization catalysts with potential for coal liquefaction, 1410
-precursor, $Fe(CO)_5$ as, in coal hydroliquefaction, 1706
Catalytic action of minerals in the low temperature oxidation of coal, 673
-coal gasification: use of calcium *versus* potassium, 1028
-gasification of chars, 1059
-hydrodeoxygenation of SRC-II liquids, application of new ^{13}C n.m.r. techniques to the study of products from, 525
-hydrogenating depolymerization of benzene-insoluble coal extract fraction, 1687
-hydrotreatment, identification of carbazoles and benzocarbazoles in a coker gas oil and influence of, 565
--identification of nitrogen bases in a coker gas oil and influence of, on their composition, 557
-oxidation of hydrogen sulphide on activated carbons, 1064
-roles of iron and hydrogen sulphide on hydrogenation of coal, 722
Catalytic activity of coal mineral matter. 1. Effect of hydrogen pretreatment and exposure to sulphur and nitrogen compounds, 18
-of PAN-based active carbon fibre (PAN-ACF) activated with sulphuric acid for reduction of nitric oxide with ammonia, 1738
-of potassium halides in water vapour gasification of graphite, 9
Catalytically activated hydrogen, studies on the reaction of benzene and other hydrocarbons with aluminium trichloride: effect of, 231
Cation exchange materials, preparation of. by oleum sulphonation of an Utrillas Spanish lignite, 1743
Chars, and tars, from the pyrolysis of coals of different rank in hydrogen and in nitrogen, structural differences in the, 897
-Canadian coal-derived, chemical reactivity of, 1197
-catalytic gasification of, 1059
-coal, kinetic and FT-i.r. studies of the sodium-catalysed steam gasification of, 1604
--, reactive intermediate in the alkali-carbonate-catalysed gasification of, 1600
-co-carbonization of coking coal with K_2CO_3: structure of the resulting, 875
-Douglas Fir and Cottonwood, kinetics of gasification of, by carbon dioxide, 210
-dynamic thermogravimetric studies on the effect of boric oxide on a coke and, 1068
-effects of catalyst addition to coal on CO_2 adsorption kinetics of coal and, 477
-gasification, lignite, catalysis of, by exchangeable calcium and magnesium, 1214
-lignite, identification of the combustion behaviour of, between 350 and 900°C, 385
-peat and semicoke, enhanced reactivity of metal-impregnated, during gas phase hydrogenolysis, 30
-vitrinite, retention of liptinitic structure in, 239
Chemical intermediates from low-temperature steam gasification of biomass, analysis of, 4
Chemical properties of tertiary coals of Upper Assam and Arunachal Pradesh, abnormalities in the, 1318
Chitinous fragments in coal, 1504
Chlorides, metal, reactions of, with bituminous coal, 952
Chlorine, combination of, in coal, 726
-inorganic-to-organic ratio, estimation of, in coal, 1334
-total, in coal seam profiles, 782
-water-soluble, from coal and mudrocks, 774
Chromatography: *see* Instrumental methods of analysis
Coal and coal ash, Mössbauer studies of iron-bearing minerals in, 695
-and coal extracts, removal of pyridine and quinoline from, 1468
-and model polymers, tar evolution from: theory and experiments, 1302
-and mudrocks of the Cannock and North Staffordshire coalfields, water-soluble chlorine and associated major cations from the, 774
-and pitch, physico-chemical interactions of, during co-carbonization, 494
-and vitrinite concentrates, studies of. Determination of aromatic and aliphatic CH groups in coal by FT-i.r., 1253
-, anthracite, e.p.r. studies of outburst-prone, 1471
-ash, brown, and fireside deposits, Mössbauer analysis of iron phases in, 1269
--: *see also* Ash
-, aspects of gasification and structure in cokes from, 136
- at low temperatures: action of solvents on, 1. Low-rank coals, 346
-automated determination of organic sulphur in, 1645
-, bacterial removal of pyrite from, 297
-blends, characterization of coal and, by automatic image analysis: use of the Leitz texture analysis system, characterization of coal and, 313
-British, chemistry of some maceral concentrates from, 1655
--correspondence between the composition and plastic properties of, and the structural properties and reactivity of the corresponding cokes, 101
-, brown: *see* Brown coal
-caking properties of, effect of alkali treatment on, 13
- Canadian, some physical properties of, and their effects on coal reactivity, 1564
-carbonization of, to produce anisotropic cokes. 5. Structural factors of coals influencing carbonization properties, 847
-catalytic action of minerals in the low temperature oxidation of, 673
-- roles of iron and hydrogen sulphide on hydrogenation of, 722
-characterization and classification of

Rocky Mountain, by Curie-point pyrolysis mass spectrometry, 640
--rapid, by FT-i.r. spectroscopy, 139
-chemical beneficiation of, with aqueous hydrogen peroxide/sulphuric acid solutions, 1561
-chemistry, superacid. 1. $HF:BF_3$ catalysed depolymerization-ionic hydroliquefaction of coals under mild conditions, 1130
--superacid. 2. Model compound studies under conditions of $HF:BF_3:H_2$ catalysed mild coal liquefaction, 1427
--superacid. 3. Electrophilic substitution of coals under 'stable ion' conditions and the conversion of functionalized coals with the $HF:BF_3:H_2$ liquefaction system, 1432
-chitinous fragments in, 1504
-combination of chlorine in, 726
-constitution of tars from flash pyrolysis of, 1570
-conversion, hydroliquefaction of Victorian brown coal in a continuous reactor: 1. Effects of residence time, temperature and catalysts on, 147
-cross-linking of macromolecules in, 891
-determination of aromatic and aliphatic CH groups in, by FT-i.r. 1. Studies of coal extracts, 1245
--of aromatic and aliphatic CH groups in, by FT-i.r. 2. Studies of coals and vitrinite concentrates, 1253
--of COOH groups in, application of FT-i.r. spectroscopy to the, 1002
--of ether oxygen in, by ^{13}C CP/MAS n.m.r. spectrometry and acetylation, 282
--of total fluorine in, by the combustion-hydrolysis/fluoride-ion selective method, 1552
-, different rank, structural differences in the tars and chars from the, hydrogen and nitrogen pyrolysis, 897
-diffusion models for gas production from, determination of diffusion parameters, 256
--models for gas production from,: application to methane content determination, 251
-direct method of determining the methane content of, - a modification, 425
-dissolution, donor solvent, promotion of the bond cleavage reactions of diphenylalkanes and the related ethers and amines, aspects of the chemistry of, 810
-effects of catalyst addition, on CO_2 adsorption kinetics of coal and char, 477
--of Lewis acid catalysts on the hydrogenation and cracking of three-ring aromatic and hydroaromatic structures related to, 469
--of organic solvents on the EPR spectrum of, 1641
-equilibrium studies of the direct reduction of sulphur dioxide by, 1450
-estimation of the inorganic-to-organic chlorine ratio in, 1334
-extract, benzene-insoluble fraction, catalytic hydrogenating depolymerization of, 1687
-flash pyrolysis of, molecular weight distributions of tars produced by, 606
--1. An indication of the olefin precursors in coal by CP/MAS ^{13}C n.m.r. spectroscopy, 1113
--2. Polymethylene compounds in low temperature flash pyrolysis tars, 1119
--3. An analytical method for polymethylene moieties in coal, 1125
--4. Polymethylene moieties in coal macerals, 1226
-- 5. Pyrolysis in an atmosphere of methane, 1716
-from the Powhatan No. 6 mine, Ohio, distribution of trace elements in, 318
-gasifier ash, comparison of leachable trace element levels in, with levels in power plant ash, 505
-Illinois No. 6, displacement of retained pyridine by aqueous tetrahydrofuran from, 868
--solid state magnetic resonance spectra of, and some reductive alkylation products, 513
--supercritical toluene and ethanol extraction of an, 227
-Ireland Mine, kinetic rate model interpretation of the SRC-II liquefaction of an, 600
-Kentucky 9/14, hydroliquefaction of, using bottoms recycle, 872
-Liddell, short contact time dissolution, 66
-liquid fractions, acids and bases, Bolles–Drago approach to mixtures, 573
-matrix, decomposition of pyrite and trapping of sulphur in a, during pyrolysis of coal, 1579
-medium volatile, role of the influence of potassium during pyrolysis of, 870
-microscopic *in-situ* studies of the solvent-induced swelling of thin sections of, 1324
-natural weathering of, 292
-new approach to the analysis of the ^{13}C CP/MAS n.m.r. spectrum of, 1621
--chemical structural features of, 888
-organic titanium in, 1710
-oxidation of pyrite in, to magnetite, 662
-parameters, correlations between pyrolysis mass spectra of coals and, 793
-particles, devolatilization of, in fluidized beds, 1748
--fine, characterization of, by steric field-flow fractionation, 621
--in fluidized beds, model for devolatilization of, 1157
--large, in a hot fluidized bed, release of volatiles from, 1013
-paste, viscosity changes in, during hydrogenation, 164
-physical mechanism of solvolytic liquefaction of, through depolymerization. Factors leading to reduction in reagent concentration and reaction time, 1329
-preparation and pyrolysis of O- and C-benzylated Illinois No. 6, 1339
-properties, Heavy media separation of SRC-II feedstocks. 1. Effect on, 84
--of Taiwan coking, 1378
-pulverized Western Canadian, viscosity measurements of slags from, in a pilot-scale research boiler, 939
-pyrolysis at high temperatures and pressures, 1230
--of a $ZnCl_2$-impregnated, in an inert atmosphere, 1583
-reductively alkylated Liddell, fate of ^{13}C-labelled alkyl groups on, during hydrogenation at 400°C, 1236
-relation of the chemical structure of, to its hydropyrolysis, 482
-review of the kinetics of pyrolysis and hydropyrolysis in relation to the chemical constitution of, 731
-Rocky Mountain, correlations between pyrolysis mass spectra of, and conventional coal parameters, 793
-ruthenium tetroxide - a reagent with the potential for the study of oxygen functionalities in, 423
-samples, concern over, 1030
-seam profiles from the South Staffordshire (Cannock) coalfield, total chlorine in, 782
-series, homogeneous, relations between Rock–Eval T_{max} and other parameters in a sedimentologically, 430
-slurries, anodic oxidation of, in flow-through packed bed electrodes, 947
--, model selection for aqueous, desulphurization, 116
-solvent, molecular interactions, cross-polarization n.m.r. as a tool to investigate, 571
-solvolysis in a series of model compound systems, 1404
-stockpiles, distribution of free gaseous oxygen in, 943
-study of deuterium transfer, isotope effects and structural distributions of products of reactions of, in deuterated tetralin using ^2H and ^{13}C FT-n.m.r. and solid-state ^{13}C FT-n.m.r., 990
-Sulcis low-rank, hydroliquefaction of. 1. Conversion to low-sulphur fuel oil, 1414
-supercritical gas extraction of, with hydrogen-donor solvents, 1174
-swelling in binary solvent mixtures: pyridine-chlorobenzene and *N,N*-dimethylaniline-alcohol, 1538
--, by solvents, a rapid and convenient method for measuring the, 935
-tertiary, of Upper Assam and Arunachal Pradesh, abnormalities in the chemical properties of, 1318
-tetralin dissolution of macerals separated from a single, 341
-textural changes in, after reduction with lithium in ethylenediamine, 1533
-, Thermoplastic properties of, at elevated pressures. 1. Evaluation of a high-pressure microdilatometer, 109
-via a weighted mean activation energy, reactivity assessment of, 1436
-Victorian brown, lithotypes occurring in, 1629
-water–methanol mixtures, viscosities of, 1182
-water–zinc reaction product, structural analysis of pyridine extract of, 1528
-wet low-rank, model for drying during fluidized-bed combustion of, 1020
-XPS investigation of the dewatering of fine, using silicone additives, 129
-Yallourn, structural analysis of, application of high-field, high-resolution ^{13}C CP/MAS n.m.r. spectroscopy to, 1363

Coal, bituminous, and semicoke, ^1H n.m.r. relaxation in, 522
-Eastern USA run-of-mine, universal size distribution of, 627
-Kentucky, thermogravimetry and differential scanning calorimetry of, 262
-macerals, analysis of solvent extracts of, by chromatography ^1H n.m.r. and field-desorption mass spectrometry, 634
--and the coking process. 1: Effect of basic coal properties on the process of thermal degradation, 838
-reactions of, with metal chlorides in carbon tetrachloride, 952

Coal char, gasification of, variation of rate during potassium-catalysed CO_2, 1008
-reactive intermediate in the alkali-carbonate-catalysed gasification of, 1600
-studies of the Na-catalysed steam gasification of, 1604

Coal charring, comparison of effects of adding Boudouard catalysts before and after, 133

Coal, coking, co-carbonization of, with K_2CO_3: structure of the resulting chars, 875
-effect of inorganic corrosion inhibitors on the caking properties of, 1464

–from southeastern British Columbia, changes associated with natural *in-situ* weathering of, 548
–mineral matter effects on air oxidation of cokes from, 1547
–weathering characteristics of, use of a gas flow test in assessing weathering propensity, 551
Coal combustion: *see* Combustion, coal
Coal derivatives, molecular mass calibration in size-exclusion chromatography of, 1556
Coal-derived asphaltenes: *see* Asphaltenes, coal
Coal-derived chars, Canadian, chemical reactivity of, 1197
Coal-derived liquid, correlating NO_x, smoke and wall temperature in a combustion turbine burner, 1731
–determination of functional groups of, by n.m.r. and elemental analysis, 803
–new method for obtaining the distillation curves of petroleum products and, using a small amount of sample, 61
–observation of colloidal growth in, 1178
Coal-derived materials as vehicles for brown coal hydroliquefaction reactions, 1694
–fractional destraction of, 1619
–do molecular weight determinations of, give meaningful answers? 1202
Coal-derived oils and model compounds, steam cracking of, 1. Cracking of tetralin and t-decalin, 756
–and model compounds, steam cracking of, 2. Cracking of hydrogenated coal-derived oils, 762
–application of the DEPT pulse sequence for the generation of $^{13}CH_n$ subspectra of, 1276
Coal-derives products, solubility characterization of, using pressure filtration, 1671
Coal-derived solvents, chemistry of solvents in coal liquefaction. Quantification of transferable hydrogen in, 1138
Coal desulphurization: *see* Desulphurization, coal
Coal extract fraction, mathematical analysis of the kinetics of hydrogenating depolymerization of benzene-insoluble, in the absence of catalyst, 744
–removal of pyridine and quinoline from coal and, 1468
–solutions in pyridine, small-angle neutron scattering study of, 274
–studies of. Determination of aromatic and aliphatic CH groups in coal by FT-i.r., 1245
Coal extraction: *see* Extraction, coal
Coal-fired power plants, fly ash from, and bottom ash from lignite-natural gas combustion, ^{57}Fe Mössbauer spectroscopic studies of, 788
Coal liquefaction: *see* Liquefaction, coal
Coal, low-rank, action of solvents on coal at low temperatures, 346
–the determination of carboxyl groups in, 723
Coal macerals, high-resolution density variations of, 1367
–polymethylene moieties in. Coal flash pyrolysis, 1226
–separated by density gradient centrifugation, chemical variations in, 1166
Coal mineral matter, characterization and catalytic activity of, 1. Effect of hydrogen pretreatment and exposure to sulphur and nitrogen compounds, 18
–sub-micron, analysis of, via scanning transmission electron microscopy, 24
Coal–oil mixtures agglomeration process, kinetic study of agglomerate growth in, 738
–performance of a sonic burner system firing, 121
–: *see also* Fuel liquids and Fuel blends
Coal, reactivity of cycloalkanes during the solvent extraction of, 1476
–in hydrogenation, 427
–testing for entrained gasification, laboratory-scale, 205
Coal structure, aspects of gasification and, in cokes, 136
–average, structural analysis of pyridine extract of zinc–water–coal reaction product, 1528
–chemical, relation to hydropyrolysis, 482
–from coal to single-stage and two-stage products: a reactive model of, 1187
Coals, subbituminous, liquefaction of, with a basic nitrogenous model process solvent, 961
Coal volatiles combustion–coal pyrolysis analogy: Observation of 'low' apparent global activation energies, 604
–yield and element partition in rapid pyrolysis, 1347
Coalification studies, 3-dimensional and synchronous fluorescence spectroscopy applied to, 1636
Co-carbonixation of Ashland A240 petroleum pitch with alkali metal carbonates and hydroxides, 1594
–of coking coal with K_2CO_3: structure of the resulting chars, 875
–of oxidized coals with pitches and decacyclene, 1588
–physico-chemical interactions of coal and pitch during, 494
Coke, a high-rank vitrinite, and a petroleum needle-coke, disclinations in the optical texture of, 1382
–and a char, dynamic thermogravimetric studies on the effect of boric oxide on, 1068
–anisotropic, carbonization of coals to produce, 5. Structural factors of coals influencing carbonization properties, 847
–correspondence between the composition and plastic properties of British coals and the structural properties and reactivity of the corresponding, 101
–formcoke, material characteristics affecting, 1385
–formed, derived from Turkish lignites by carbonization of binderless briquettes, properties and potential of, 1221
–from a coking coal, mineral matter effects on air oxidation of, 1547
–from coals, aspects of gasification and structure in, 136
–metallurgical, correlation of microstrength and industrial strength indices of, 866
Coking process, macerals in bituminous coals and, 838
–propensity of carbon and alumina supported catalysts, hydrodesulphurization activity and, 1095
–reaction in hydrogenation, 449
–*see also* Coal, coking
Coking coals, effect of inorganic corrosion inhibitors on the caking properties of, 1464
–Taiwan, properties of, 1378
Colloidal growth in coal-derived liquids, observation of, 1178
Combustion behaviour of lignite char between 350 and 900°C, identification of the, 385
–bottom ash from lignite-natural gas, 788
–coal, evaluation of intrinsic kinetic parameters of, 488
––, volatiles, coal pyrolysis analogy: observation of 'low' apparent global activation energies, 604
–engine, internal, operation of, lean conditions, 1485
–fluidized-bed, of wet low-rank coals, model for drying during, 1020
–hydrolysis/fluoride-ion selective method, determination of total fluorine in coal by the, 1552
–of solid substances, exergetic efficiency of, 414
–thermogravimetry, characteristics of high-carbon fluidized-bed cyclone ashes, 499
–turbine burner, correlating NO_x, smoke and wall temperature in, 1731
–variations in the pore structure of oil shales during retorting and, 1523
Conversion of bituminous coal in CO/H_2O systems 2. pH Dependence, 1206
–of bituminous coal in CO/H_2O systems 3. Soluble metal catalysis, 1211
–of coal to low-sulphur fuel oil, 1414
––with $HF:BF_3:H_2$ liquefaction system, 1432
Copper removal from effluents using a sulphonated lignite: bath and fixed-bed studies, 373
Correspondence, 573, 726, 1030
Corrosion inhibitors, effect of, on the caking properties of coal, 1464
Cracking of hydrogenated coal-derived oils, 762
–of tetralin and t-decalin, 756
–of 3-ring aromatic structures related to coal, 469
Cresol as a co-solvent in coal liquefaction and product analysis, effect of, 285
Crude oil, vacuum distillation residue from, some aspects of the carbonization of, 202
Crudes, heavy, a comparison of methods for determining the specific gravity of, 864
Crystals, determination of the mass fraction of, in partly frozen hydrocarbon fuels, 378
Cycloalkanes, reactivity of, during solvent extraction of coal, 1476
Decomposition of pyrite and trapping of sulphur in a coal matrix during pyrolysis of coal, 1579
Density gradient centrifugation, coal macerals separated by, 1166
–variations of coal macerals, high-resolution, 1367
Depolymerization, catalytic hydrogenating, of benzene-insoluble coal extract fraction, 1687
–hydrogenating, of benzene-insoluble coal extract fraction, 744
–/ionic hydroliquefaction of coals under mild conditions, $HF:BF_3$ catalysed, 1130
–physical mechanism of solvolytic liquefaction of coal through, 1329
DEPT pulse sequence: *see* Instrumental methods of analysis
Desulphurization, model selection for aqueous slurry coal, 116
Devolatilization of coal particles in fluidized beds, 1157
–of large coal particles in fluidized beds, 1748
Dewatering of fine coal using silicone additives, XPS investigation of the, 129
Diagenetic evolution of sedimentary organic matter, unexpected enrichment of nitrogen during the, 1508
Differential scanning calorimetry: *see* Instrumental methods of analysis
Diffusion coefficients of asphaltenes, 530

–models for gas production from coals: Application to methane content determination, 251
–parameters, determination of: Diffusion models for gas production from coals, 256
Disclinations in optical texture of cokes, 1382
Dissolution, acid, of mineral matrix in oil shale, 920, 927
–short contact time, of Liddell coal, 66
Distillates, coal-derived and vacuum still bottoms, Relationship between solvent-derived and compound-class fractions in, 93
–fractions, middle, of a syncrude from Athabasca oil sands, upgrading of, 190
–petroleum and shale-oil, removal of N-containing compounds from, 1472
–, SRC-II middle, hydrogen bonding of the acid and base fractions separated from, 816
–– thermal decomposition of, under surface vaporizing conditions, 185
Distillation residue vacuum from crude oil, some aspects of the carbonization of, 202
Distillation curves, of petroleum products and coal-derived liquids, new method for obtaining, 61

Editorials, 3, 1035
Effluents using a sulphonated lignite: bath and fixed-bed studies, copper removal from, 373
Electrophilic substitution of coals under 'stable ion' conditions, 1432
Energy dispersive X-ray microanalysis, determination of organic sulphur in coal, 1645
E.p.r.: *see* Instrumental methods of analysis
Equilibrium studies of the direct reduction of sulphur dioxide by coal, 1450
E.s.r.: *see* Instrumental methods of analysis
Ethers, alkyl aryl, in lignite solubilization, 1422
–bond cleavage reactions of, in coal dissolution, 810
–oxygen, in coals, determination of, by ^{13}C CP/MAS n.m.r. spectrometry and acetylation, 282
Ether bridges, reactions of methylene and, 586
Ethylation, reductive, in ethereal solvents, 1441
Ethylene oxide oxidation in a well-stirred flow reactor, qualitative aspects of, 43
Excited triplet states in bituminous coal, 1474
Exergetic efficiency of comminution of solid substances, 414
Exergetic analysis of atomization process of liquid, 419
Extracts, basic, low-temperature pyrolysis of, 904
–fraction, benzene-insoluble coal, catalytic hydrogenating depolymerization of, 1687
–pyridine, of lignite, 1417
––of zinc–water–coal reaction product, structural analysis of, 1528
–solutions, coal, in pyridine, small-angle neutron scattering study of, 274
–: *see also* Coal extracts
Extractable metal salts of carboxylic acids in Green River oil shale, 303
Extraction of coal using supercritical water, 956
–supercritical gas, of coal with hydrogen-donor solvents, 1174
–supercritical toluene and ethanol, of an Illinois No. 6 coal, 227

Feedstocks, heavy petroleum, factors influencing the separation of asphaltenes from, 616
–SRC-II, Heavy media separation of, 1. Effect on coal properties, 84
––, heavy media separation of. 2. Effect of liquefaction yields, 1148
Fenton reaction, chemical oxidation of anthracite with hydrogen peroxide via, 221
Flotation and sulphur selectivity of a bituminous coal with different degrees of oxidation, 1466
Fluidized beds, combustion of wet low-rank coals, model for drying during, 1020
–cyclone ashes, characteristics of, 499
–devolatilization of large coal particles in, 1748
–hot, release of volatiles from large coal particles in, 1013
–model for devolatilization of coal particles in, 1157
Fluorine, total, determination of, in coal, 1552
Fly ash: *see* Ash, fly
Fourier transform infrared spectroscopy: *see* Instrumental methods of analysis, FT-i.r.
Formcoke, material characteristics affecting, 1385
Fossil fuels, liquid, separation of, into acid, base and neutral concentrates 1. An improved nonaqueous ion exchange method, 1290
Fossil fuel-derived asphaltenes, definition of, in terms of average structural properties, 883
Fractionation, recovery, and study of oils from a lignite, 355
Free radical involvement in the drying and oxidation of Victorian brown coal, 39
–produced during coal liquefaction using ESR, investigation of, 153
Fuels derived from shale and petroleum, storage stability studies of, 1152
–hypergolic, novel solid, for hybrid propellants, 709
–solid, materials, determination of carbon centre types in, 1241
–: *see also* Hydrocarbon fuels
Fuel blends, bulk modulus of vegetable oil – diesel fuel, 713
–coal–oil agglomeration process, 738
––performance of a sonic burner system firing 121
–coal–water–methanol mixtures, viscosities of, 1182
–zinc–water–coal reaction, 968
–zinc–water–coal reaction product, structural analysis of pyridine extract of, 1528
Fuel liquids, SRC blends, effect of various phenol additives on viscosity of, 593
–SRC-II liquids, catalytic hydrodeoxygenation of, 525
–: *see also* Coal-derived liquids
Fuel oils, heavy, and their fractions, pyrolysis and oxidation of, in a thermogravimetric apparatus, 657
–low-sulphur, hydroliquefaction of Sulcis low-rank coal, conversion to, 1414

Gas production from coal: Application to methane content determination, diffusion models for, 251
––from coal: determination of diffusion parameters, diffusion models for, 256
Gas chromatography: *see* Instrumental methods of analysis
Gas oil, coker, identification of carbazoles and benzocarbazoles in, 565
–coker, identification of nitrogen bases in, 557
Gasification and structure in cokes from coals, aspects of, 136
–catalysis of lignite char, by exchangeable calcium and magnesium, 1214
–chars, catalytic, 1059
–CO_2, effects of catalysts and, on the e.s.r. of carbon black, 679
––of carbon catalysed by alkali metals. Reactivity and mechanism, 1036
–, coal: catalytic, use of calcium *versus* potassium, 1028
––char, alkali-carbonate-catalysed, reactive intermediate in, 1600
–––, variation of rate during potassium-catalysed CO_2, 1008
–entrained, laboratory-scale coal reactivity testing for, 205
–low-temperature steam, of biomass, analysis of chemical intermediates from, 4
–of carbon in CO_2, mechanism of the, potassium catalysed, 1043
–of carbonaceous materials in CO_2 and steam, observation of alkali catalyst particles during, 686
–of Douglas Fir and Cottonwood chars by carbon dioxide, kinetics of, 210
–of potassium-intercalated and impregnated natural graphites, 1048
–steam, of coal chars, kinetic and FT-i.r. studies of the sodium-catalysed, 1604
–water vapour, of carbon, mixtures of potassium sulphate and iron sulphate as catalysts for. 2. Wettability phenomena and reactions of the catalyst precursors, 1397
––of carbon, mixtures of potassium sulphate and iron sulphate as catalysts for. 3. Kinetic studies, 1393
––of graphite, catalytic activity of potassium halides in, 9
Gasifier, coal ash, leachable trace elements in, 505
Gel permeation chromatography: *see* Instrumental methods of analysis
Geochemistry of the Muthurajawela peat deposit of Sri Lanka, 1494
Graphite, catalytic activity of potassium halides in water vapour gasification of, 9
–impregnated natural, gasification of potassium-intercalated and, 1048
Gray-King assay, a modified method, for small oil shale samples, 1455

Heat transfer in layered media with application to oil shale materials, 1726
Heterocycles, sulphur, determination of, in selected synfuels, 702
Humic acids from lignite, effects of five variables in phosphorus fixation by, 692
Hydrocarbon compounds, thermodynamic equilibria in the C–H system: stability and distribution of, 408
–reaction of benzene and, with aluminium trichloride, 231
–: *see also* polynuclear aromatic hydrocarbons
Hydrocarbon fuels, determination of the mass fraction of crystals in partly frozen, 378
–model, effect of composition on freezing points of, 543
Hydrocracking of diphenylmethane: roles of H_2S pyrrhotite and pyrite, 1660
Hydrodeoxygenation, catalytic, of SRC-II liquids, 525
Hydrodesulphurization activity and coking propensity of carbon and alumina supported catalysts, 1095

–catalysts with potential for coal liquefaction, polyborane-derived metal borides, 1410

Hydrogen atoms, coal liquefaction induced by, 718

–bonding of the acid and base fractions separated from SRC II middle distillates, 816

–donor solvent, short contact time liquefaction of coal using, 1615

––supercritical gas extraction of coal with, 1174

–fluoride: boron trifluoride catalysed depolymerization of coals, 1130

–halide elimination reactions, carbon as a catalyst in oxidation reactions and, 1061

–: $HF:BF_3$ catalysed mild coal liquefaction, 1427, 1432

–incorporation during coal liquefaction, 440

–*in-situ* generation, in coal liquefaction, 968, 973

–interaction of glassy carbon with electrolyte and, 1107

–mass transfer and mixing energy effects in SRC-II coal liquefaction reactors, 1143

–peroxide/sulphuric acid solutions, beneficiation of coal with, 1561

–pretreatment, effect of; catalytic activity of coal mineral matter, 18

–produced from methanol, coal liquefaction by, 579

––in an onboard methanol reforming unit, 1485

–pyrolysis of coals in, 897

–studies on the effect of catalytically activated, 231

–sulphide, catalytic role in coal hydrogenation, 722

––on activated carbons, catalytic oxidation of, 1064

–transferable, quantification of, in coal-derived solvents, 1138

Hydrogenated coal-derived oils, cracking of, 762

Hydrogenating depolymerization of benzene-insoluble coal extract fraction, 744

–depolymerization, catalytic, of benzene-insoluble coal extract fraction, 1687

Hydrogenation and cracking of three-ring aromatic and hydroaromatic structures related to coal, effects of Lewis acid catalysts on the, 469

–at 400°C, fate of ^{13}C-labelled alkyl groups on reductively alkylated Liddell coal during, 1236

–coal, microscopic investigation of agglomeration of, by secondary vitroplast residues, 134

––model for the process, and its applications, 174

–coking reaction in, 449

–/dehydrogenation of pyrenes catalysed by sulphided cobalt-molybdate at coal liquefaction conditions, 463

–effect of air oxidation on coal, 35

–of brown coal, 1694

–of coal, catalytic roles of iron and hydrogen sulphide on, 722

–of coal-derived asphaltene, pressure and temperature effects on, 978

–of coal, formation of pyrolytic carbon in a continuous reactor for, 169

–lignite, differential thermal analysis of, 1610

–liquids, coal, estimation of compound classes in, by thin-layer chromatography, 984

–reactivity of coals in, 427

–viscosity changes in coal paste during, 164

Hydrogenolysis, gas phase, enhanced reactivity of metal-impregnated peat char and semicoke during, 30

–of bibenzyl, high temperature, 857

–products of pyridine extract of a Japanese lignite, 1417

–structural study of asphaltene components by, 1570

Hydroliquefaction, coal, using $Fe(CO)_5$ as a catalyst precursor, 1706

–ionic, of coals under mild conditions. 1. $HF:BF_3$ catalysed depolymerization, superacid coal chemistry, 1130

–of Kentucky 9/14 coal using bottoms recycle, 872

–of Sulcis low-rank coal. 1. Conversion to low-sulphur fuel oil, 1414

–of Victorian brown coal in a continuous reactor: 1. Effects of residence time, temperature and catalysts on conversion, 147

–reactions, brown coal, coal-derived materials as vehicles for, 1694

Hydrolysis – combustion/fluoride-ion selective method for determination of total fluorine in coal, 1552

–high temperature, of tetrahydrothiophene and thiophene, some chemistry of organosulphur compound types occurring in heavy oil sands. 2. Influence of pH on the, 125

Hydropyrolysis and pyrolysis, a review of the kinetics of, in relation to the chemical constitution of coal, 731

–relation of the chemical structure of coal to its, 482

Hypergolic fuels for hybrid propellants, 709

Ignition behaviour of an adiabatic SRC-II coal liquefaction reactor, experimental study of the, 178

Image analysis, characterization of coal and coal blends by automatic, use of the Leitz texture analysis system, 313

Infrared spectroscopy: *see* Instrumental methods of analysis

Instrumental methods of analysis

–DEPT pulse sequence, application of the, for the generation of $^{13}CH_n$ subspectra of coal-derived oils, 1276

–differential scanning calorimetry and hot-stage microscopy studies, thermal decomposition of potassium permanganate thermogravimetry, 653

–e.p.r. of pyrolysed dihydronaphthalenes, 1478

––spectrum of coal, effect of organic solvents on, 1641

––studies of outburst-prone anthracite coal, 1471

–e.s.r., investigation of free radicals produced during coal liquefaction using, 153

––of carbon black, effects of catalysts and CO_2 gasification on the, 679

––study, quench solvent evaluation, 510

–fluorescence spectroscopy, three-dimensional and synchronous, coalification studies, 1636

–FT-i.r. and kinetic studies of the sodium-catalysed steam gasification of coal chars, 1604

––determination of aromatic and aliphatic CH groups in coal by. 1. Studies of coal extracts, 1245

–––of aromatic and aliphatic CH groups in coal by. 2. Studies of coals and vitrinite contentrates, 1253

––measurements, correlation of, thermoplastic and liquefaction behaviour, characterization of vitrinite concentrates, 245

––spectroscopy, application of, to the determination of COOH groups in coal, 1002

–––rapid coal characterization by, 139

––study of high-purity maceral types, 536

–FT-n.m.r. and solid state ^{13}C FT-n.m.r., study of deuterium transfer, isotope effects and structural distributions of products of reactions of coals in deuterated tetralin using ^2H and ^{13}C, 990

–g.c.–m.s., characterization of polynuclear aromatic hydrocarbons in bitumen, heavy oil fractions boiling above 350°C by, 361

–g.p.c. elution characteristics, asphaltenes, 530

–integrated, of soft brown coals, 1281

–mass spectrometry, Curie-point pyrolysis, characterization and classification of Rocky Mountain coals by, 640

––field-desorption, analysis of solvent extracts of bituminous coal macerals by chromatography ^1H n.m.r. and, 634

–Mössbauer analysis of iron phases in brown coal ash and fireside deposits, 1269

––studies of iron-bearing minerals in coal and coal ash, 695

–^{57}Fe Mössbauer, of fly ash from coal-fired power plants and bottom ash from lignite-natural gas combustion, 788

–magnetic resonance spectra, solid state, of Illinois No. 6 coal and some reductive alkylation products, 513

–n.m.r. and elemental analysis, determination of functional groups of coal-derived liquids by, 803

––cross-polarization, as a tool to investigate solvent-coal molecular interactions, 571

––study of the effects of imbibed pyridine. Aspects of the molecular structure of a bituminous vitrinite, 1262

––^{13}C of carbon types in shale oil and their relation to pyrolysis conditions, identification by, 909

–––techniques, application of new, to the study of products from catalytic hydrodeoxygenation of SRC-II liquids, 525

––^1H chromatography and field-desorption mass spectrometry, analysis of solvent extracts of bituminous coal macerals by, 634

–––relaxation in bituminous coal and semicoke, 522

–––technique for characterization of polymerized petroleum pitches, 1374

––^1H/i.r. and ^{13}C, ^1H n.m.r. spectroscopy, study of structural parameters on some petroleum aromatic fractions by, 268

––CP/MAS determination of carbon centre types in solid fuel materials by, 1241

–––^{13}C spectrometry and acetylation, determination of ether oxygen in coals by, 282

––––spectroscopy, coal flash pyrolysis. 1. An indication of the olefin precursors in coal by, 1113

––––spectroscopy, oil-shale analysis by, 915

––––spectroscopy to the structural analysis of Yallourn coal, application of high-field, high-resolution, 1363

––––spectrum of coal, new approach to the analysis of the, 1621

–Raman microprobe spectroscopy to the characterization of carbon deposits on catalysts, applications of, 1073

–scanning transmission electron microscopy, analysis of sub-micron mineral matter in coal via, 24

–size exclusion chromatographic approach, for the evaluation of processes for upgrading heavy petroleum, 612
–Size-exclusion chromatography of coal derivatives, molecular mass calibration in, 1556
–small-angle neutron scattering (SANS) study of coal extract solutions in pyridine, 274
–spectroscopic investigation of the bonding or lithotypes occurring in Victorian brown coal seams, 1629
–thin-layer chromatography, estimation of compound classes in coal hydrogenation liquids, 984
–X-ray emission spectroscopy and proton microbeam analysis, analysis of fly ash by, 1357
–XPS investigation of the dewatering of fine coal using silicone additives, 129
Ion exchange method, nonaqueous, separation of liquid fossil fuels, 1290
Iron and ruthenium catalysts, porous carbon as support for, 1089
–bearing minerals in coal and coal ash, 695
–$Fe(CO)_5$ as a catalyst precursor in coal hydroliquefaction, 1706
Iron chloride–clay system for removal of N-containing compounds from distillates, 1472
Iron complexes as catalysts, coal liquefaction using, 752
Iron sulphate and potassium sulphate mixtures as catalysts for gasification of C, 1393, 1397
Iron sulphide, catalytic role in coal hydrogenation, 722
–colloidal catalyst, coal liquefaction, 721

Kerogen pyrolysis, mechanism of, 1353
Kinetics and FT-i.r. studies of the sodium-catalysed steam gasification of coal chars, 1604
–and reaction scheme of coal liquefaction over molten tin catalyst, 719
–chemical rate processes in short contact time coal liquefaction, 716
–CO_2 adsorption, of coal and char, effects of catalyst addition to coal on, 477
–of gasification of chars by carbon dioxide, 210
–of hydrogenating depolymerization of benzene-insoluble coal extract fraction in the absence of catalyst, mathematical analysis of the, 744
–of oil generation from oil shale from Liaoning province of China, 1511
–of pyrolysis and hydropyrolysis, review of the, in relation to the chemical constitution of coal, 731
–of vapour phase oil degradation, thermal degradation of shale oils, 401
–lignite porosity study by, of gas adsorption, 1681
–parameters, intrinsic, of coal combustion, 488
–studies, mixtures of potassium sulphate and iron sulphate as catalysts for water vapour gasification of carbon, 1393
–study of agglomerate growth in coal–oil agglomeration process, 738
Kinetic rate model interpretation of the SRC-II liquefaction of an Ireland Mine coal, 600

Light scattering studies of the stability of liquid fuels, 1285
Lignite, cation exchange materials from oleum sulphonation of, 1743
–char gasification, catalysis of, by exchangeable calcium and magnesium, 1214
––identification of the combustion behaviour of, between 350 and 900°C, 385
–humic acids from, effects of five variables in phosphorus fixation by, 692
–hydrogenation, differential thermal analysis of, 1610
–Japanese, hydrogenolysis products of pyridine extract of, 1417
–/natural gas combustion, spectroscopic studies of bottom ash from, 788
–porosity study by kinetics of gas adsorption, 1681
–recovery, fractionation and study of oils from a, 355
–solubilization, alkyl aryl ethers in. 1. Study of the process, 1422
–sulphonated, copper removal from effluents using a, bath and fixed-bed studies, 373
–Texas, low-temperature pyrolysis of, basic extracts and some related model compounds, 904
–Turkish, properties and potential of formed cokes derived from, by carbonization of binderless briquettes, 1221
Liptinitic structure, in vitrinite chars, retention of, 239
Liquefaction behaviour, characterization of vitrinite concentrates: 3. Correlation of FT-i.r. measurements to thermoplastic and, 245
–catalysts, effect of organic titanium on, 1710
–coal, and product analysis, effect of cresol as a co-solvent in, 285
––behaviour of tetralin in, examination in long-run batch-autoclave experiments, 334
––bottoms, interrelationship of chemical characterization and rheological behaviour of, 158
––by colloidal iron sulphide catalyst, 721
––by *in-situ* hydrogen generation. 1. Zinc–water–coal reaction, 968
––by *in-situ* hydrogen generation. 2. Zinc–water model compound reactions, 973
––by the hydrogen produced from methanol: 2. Model compound studies, 579
––chemistry of solvents in. Quantification of transferable hydrogen in coal-derived solvents, 1138
––effect of blending on, 78
––effect of conditions, on the trace element content of the soluble non-volatile product, 453
––effect of sulphur on, in the presence of dispersed iron or molybdenum catalysts, 329
––effect of tetralin dissociation on, tubing bomb *versus* batch autoclave, 878
––hydrogen incorporation during, 440
––in nitrogen compounds, 56
––induced by hydrogen atoms, 718
––investigation of free radicals produced during, using ESR, 153
––over molten tin catalyst, kinetics and reaction scheme of, 719
––polyborane-derived metal borides, hydrodesulphurization catalysts with potential for, 1410
––process streams, comparative chemical composition and biological activity of single- and two-stage, 46
––short contact time, using hydrogen donor solvent, 1615
––simulation of chemical rate processes in short contact time, 716
––superacid coal chemistry, 2. Model compound studies under conditions of $HF:BF_3:H_2$ catalysed mild, 1427
––using iron complexes as catalysts, 752
––using ore catalysts, 1700
–conditions, coal formation of anatase from titanium (IV) preasphaltenes complexes under, 280
––coal, hydrogenation–dehydrogenation of pyrenes catalysed by sulphided cobalt-molybdate at, 463
–of an Ireland Mine coal, kinetic rate model interpretation of the SRC-II, 600
–of partially dried and oxidized coals, 71
–of subbituminous coals with a basic nitrogenous model process solvent, 961
–reactor, coal, experimental study of the ignition behaviour of an adiabatic SRC-II, 178
–solvolytic, of coal, physical mechanism of, through depolymerization. Factors leading to reduction in reagent concentration and reaction time, 1329
–SRC-II coal reactors, hydrogen mass transfer and mixing energy effects in, 1143
–system, $HF:BF_3:H_2$, 3. Electrophilic substitution of coals under 'stable ion' conditions and the conversion of functionalized coals with, 1432
–yields, heavy media separation of SRC-II feedstocks, 1148
Liquid fossil fuels, separation of, into acid, base and neutral concentrates 1. An improved nonaqueous ion exchange methods, 1290
Liquid fuels, light scattering studies of the stability of, 1285
Lithotypes occurring in Victorian brown coal seams, 1629

Macerals, coal, chemical variations in, separated by density gradient centrifugation, 1166
––high-resolution density variations of, 1367
–bituminous coal, analysis of solvent extracts of, by chromatography ^1H n.m.r. and field-desorption mass spectrometry, 634
––coals and the coking process. 1: Effect of basic coal properties on the process of thermal degradation, 838
–concentrates from British coals, chemistry of, 1655
–separated from a single coal, tetralin dissolution of, 341
–types, Fourier transform infrared study of high-purity, 536
–: *see also* Coal macerals
Magnesium catalysis of lignite char gasification, 1214
Magnetic resonance spectroscopy: *see* Instrumental methods of analysis
Magnetite, oxidation of pyrite in coal to, 662
Mass spectrometry: *see* Instrumental methods of analysis
Methane, coal flash pyrolysis in an atmosphere of, 1716
Methane content determination, application to: diffusion models for gas production from coals, 251
–of coal, direct method of determining, 425
Methylene and ether bridges, reactions of, 586
Microscopic *in-situ* studies of the solvent-induced swelling of thin sections of coal, 1324
–investigation of agglomeration of coal hydrogenation residues by secondary vitroplast, 134
Microscopy, hot-stage, studies, thermal decomposition of potassium permanganate thermogravimetry,

differential scanning calorimetry and, 653
Mineral matrix, in Green River oil shale, acid dissolution of, 920
–in Green River oil shale acid dissolution of. 2. Effect of ultrasonic field, 927
Mineral matter in coal, analysis of sub-micron, via scanning transmission electron microscopy, 24
––characterization and catalytic activity of, 1. Effect of hydrogen pretreatment and exposure to sulphur and nitrogen compounds, 18
–effects on air oxidation of cokes from a coking coal, 1547
Minerals, catalytic action of, in the low temperature oxidation of coal, 673
–iron-bearing, in coal and coal ash, 695
Model compounds, analysis of oxidation products from, 1544
–low-temperature pyrolysis of Texas lignite, basic extracts and some related, 904
–reactions, coal liquefaction by *in-situ* hydrogen generation. 2. Zinc–water, 973
–steam cracking of coal-derived oils and, 1. Cracking of tetralin and t-decalin, 756
–steam cracking of coal-derived oils and, 2. Cracking of hydrogenated coal-derived oils, 762
–studies of coal liquefaction by the hydrogen produced from methanol, 579
––under condition of $HF:BF_3:H_2$ catalysed mild coal liquefaction. Superacid coal chemistry, 1427
–systems, coal solvolysis in a series of, 1404
Models, diffusion, for gas production from coal: Determination of diffusion parameters, 256
–diffusion, for gas production from coals: Application to methane content determination, 251
–for devolatilization of coal particles in fluidized beds, 1157
–for drying during fluidized-bed combustion of wet low-rank coals, 1020
–for the coal hydrogenation process and its applications, 174
–hydrocarbon fuels, effect of composition on freezing points of, 543
–kinetic rate, interpretation of the SRC-II liquefaction of an Ireland Mine coal, 600
–of coal structure, reactive, from coal to single-stage and two-stage products, 1187
–polymers, tar evolution from coal and, 1302
–process solvent, liquefaction of subbituminous coals with a basic nitrogenous, 961
–selection for aqueous slurry coal desulphurization, 116
Molecular interactions, solvent–coal, CP n.m.r. as a tool to investigate, 571
Molecular mass calibration in size-exclusion chromatography of coal derivatives, 1556
Molecular structure, aspects of, of a bituminous vitrinite. N.m.r. study of the effects of imbibed pyridine, 1262
Molecular weight determinations of coal-derived materials, do they give meaningful answers? 1202
–distributions of tars produced by flash pyrolysis of coals, 606
Mössbauer spectroscopy: *see* Instrumental methods of analysis

Nitric oxide, reduction of, with PAN-ACF and ammonia, 1738
Nitrogen bases, identification of, in a coker gas oil and influence of catalytic hydrotreatment on their composition, 557
–oxides, correlation for a coal liquid and shale oil in a combustion turbine burner, 1731
–pyrolysis of coals in, 897
–unexpected enrichment of, during the diagenetic evolution of sedimentary organic matter, 1508
Nitrogen compounds, coal liquefaction in, 56
–effect of: catalytic activity of coal mineral matter, 18
Nitrogen-containing compounds, removal of, from distillates, 1472
Nuclear magnetic resonance spectroscopy: *see* Instrumental methods of analysis

Obituary: Reginald Arthur Mott, 291; Ian G. C. Dryden, 1483
Oils, coal-derived, application of the DEPT pulse sequence for the generation of $^{13}CH_n$ subspectra of, 1276
–degradation, kinetics of vapour phase, 401
–from a lignite, recovery, fractionation and study of, 355
–generation from oil shale, kinetics of, 1511
–heavy, fractions boiling above 350°C by g.c.–m.s. characterization of polynuclear aromatic hydrocarbons in bitumen, 361
–wood, analysis of thermochemically-derived, 368
–: *see also* Shale oils and Gas oil
Oil sands, Athabasca, upgrading of middle distillate fractions of a syncrude from, 190
–heavy, chemistry of organosulphur compound types occurring in, 1649
–heavy, some chemistry of organosulphur compound types occurring in, 2. Influence of ptt on the high temperature hydrolysis of tetrahydrothiophene and thiophene, 125
–preparation of bitumen from, by centrifugation, 862
Oil-shale analysis by CP/MAS-^{13}C n.m.r. spectroscopy, 915
–and brown coal, rapid pyrolysis of, 767
–application of pyrolysis to, 1720
–beneficiation by froth flotation, 435
–extractable metal salts of carboxylic acids in Green River, 303
–from Liaoning province of China, kinetics of oil generation from, 1511
–Green River, acid dissolution of mineral matrix in, 920
––acid dissolution of mineral matrix, 2. Effect of ultrasonic field, 927
–Julia Creek, formation of calcium silicates during processing of, 769
–materials, heat transfer, 1726
–samples, a modified Gray-King assay method for, 1455
–variations in the pore structure of, during retorting and combustion, 1523
Olefin precursors in coal, 1113
Optical activity, shale oil, 310
Optical properties of carbonized sporinite in vitrinite/sporinite blends, 827
–of high-temperature heat-treated vitrinites, 820
Optical texture of a high-rank vitrinite coke and a petroleum needle-coke, disclinations in the, 1382
Organosulphur compound types occurring in heavy oil sands. 2. Influence of pH on the high temperature hydrolysis of tetrahydrothiophene and thiophene, Some chemistry of, 125
Oxygen, ether, in coals, determination of, by ^{13}C CP/MAS n.m.r. spectrometry and acetylation, 282
–free gaseous, in coal stockpiles, 943
–functionalities in coal, ruthenium tetroxide – a reagent with the potential for the study of, 423
Oxidation, air, effect of, on coal hydrogenation, 35
––of cokes from a coking coal, mineral matter effects on, 1547
–anodic, of coal slurries in flow-through packed bed electrodes, 947
–by Simon's reagent and HNO_3–H_2SO_4, carbons formed catalytically by nickel in phenolic resin carbon, 747
–catalytic, of hydrogen sulphide on activated carbons, 1064
–chemical, of anthracite with hydrogen peroxide via the Fenton reaction, 221
–Deno's, analysis of oxidation products from model compounds, 1544
–ethylene oxide, in a well-stirred flow reactor, qualitative aspects of, 43
–flotation and sulphur selectivity of a bituminous coal with different degrees of, 1466
–low-temperature, effect of, on the composition of Athabasca bitumen, 858
––of coal, catalytic action of minerals in the, 673
––of Victorian brown coal, 669
–of coal-derived asphaltenes with thallium(III), 217
–of heavy fuel oils and their fractions in a thermogravimetric apparatus, pyrolysis and, 657
–of pyrite in coal to magnetite, 662
–of Victorian brown coal, Free-radical involvement in the drying and, 39
–reactions, carbon as a catalyst in, and hydrogen halide elimination reactions, 1061
Oxidized coals, co-carbonization of, with pitches and decacyclene, 1588
–partially dried, liquefaction of, 71

Peat char and semicoke, Enhanced reactivity of metal-impregnated, during gas phase hydrogenolysis, 30
–deposit, geochemistry of, 1494
Petroleum and shale-oil distillates, elucidation of the iron chloride–clay system for removal of nitrogen-containing compounds from, 1472
–aromatic fractions, study of structural parameters of, by ^1H n.m.r./i.r. and ^{13}C, ^1H n.m.r. spectroscopy, 268
–needle-coke, disclinations in the optical texture of a high-rank vitrinite coke and, 1382
–storage stability studies of fuels derived from shale and, 1152
Petroleum asphaltenes: *see* Asphaltenes, petroleum
Petroleum, heavy, feedstocks, factors influencing the separation of asphaltenes from, 616
–size exclusion chromatographic approach for the evaluation of processes for upgrading, 612
Petroleum pitch, Ashland A240, co-carbonization of, with alkali metal carbonates and hydroxides, 1594
–, polymerized, ^1H n.m.r. technique for characterization of, 1374
Petroleum products and coal-derived liquids, new methods for obtaining the distillation curves of, using a small amount of sample, 61
Phenol additives, effect on viscosity of SRC blends, 593
Phenolic resin carbon, carbons formed catalytically by nickel in, 747

Phosphorus fixation by humic acids from lignite, 692
Physical mechanism of solvolytic liquefaction of coal through depolymerization. Factors leading to reduction in reagent concentration and reaction time, 1329
Pitch and coal, co-carbonization of, 494
–and decacyclene, co-carbonization of oxidized coals with, 1588
–co-carbonization of Ashland A240 petroleum, with alkali metal carbonates and hydroxides, 1594
–liquid, capillary flow of, 1677
–petroleum, characterization of, 1374
Plastic properties, correspondence between the composition and, of British coals and the structural properties and reactivity of the corresponding cokes, 101
Polymers, model, tar evolution from coal and, 1302
Polymerized petroleum pitches, characterization of, 1374
Polymethylene compounds in low temperature flash pyrolysis tars, 1119
–moieties in coal, 1125
––in coal macerals, 1226
Polynuclear aromatic hydrocarbons, characterization of, in bitumen, heavy oil fractions boiling above 350°C by g.c.–m.s., 361
Pore structure of oil shales, variation of, during retorting and combustion, 1523
Porosity study of lignite by kinetics of gas adsorption, 1681
Potassium catalysed gasification of carbon in CO_2, mechanism of, 1043
–sulphate and iron sulphate mixtures as catalysts for gasification of C, 1393, 1397
–, use of, *versus* calcium in coal gasification, 1028
Potentiometric titrations, non aqueous, acid–base characteristics of petroleum asphaltenes as studied by, 197
Propellants, novel solid hypergolic fuels for hybrid, 709
Preface, 1035
Preasphaltene complexes, titanium (IV), formation of anatase from, under coal liquefaction conditions, 280
Publications received, 288, 728
Pyridine extract of lignite, hydrogenolysis products of, 1417
–extract of zinc–water–coal reaction product, 1528
–removal of, from coal, 1464
–retained, displacement of, by aqueous THF from coal, 868
Pyrite, decomposition of, in a coal matrix during pyrolysis, 1579
–from coal, bacterial removal, 297
–in coal, oxidation of, to magnetite, 662
–role of, in hydrocracking of diphenylmethane, 1660
Pyrolysis and hydropyrolysis in relation to the chemical constitution of coal, review of the kinetics of, 731
–and oxidation of heavy fuel oils and their fractions in a thermogravimetric apparatus, 657
–application of, to the characterization and upgrading of oil shales, 1720
–coal, at high temperatures and pressures, 1230
––/coal volatiles combustion analogy, observation of 'low' apparent global activation energies, 604
–coal flash. 1. An indication of the olefin precursors in coal by CP/MAS ^{13}C n.m.r. spectroscopy, 1113
–––2. Polymethylene compounds in low temperature flash pyrolysis tars, 1119
–––3. An analytical method for polymethylene moieties in coal, 1125
–––4. Polymethylene moieties in coal macerals, 1226
–––5. Pyrolysis in an atmosphere of methane, 1716
–conditions, identification by ^{13}C n.m.r. of carbon types in shale oil and their relation to, 909
–flash, of Australian coals, constitution of tars from: 3. Structural study of Millmerran asphaltene components by hydrogenolysis, 1570
––flash, coal molecular weight distributions of tars produced by, 606
–kerogen, on the mechanism of, 1353
–low-temperature, of Texas lignite, basic extracts and some related model compounds, 904
–mass spectra of Rocky Mountain coals and conventional coal parameters, correlations between, 793
–mass spectrometry, Curie-point, 640
–medium volatile coal, role of the influence of potassium during, 870
–of coal, decomposition of pyrite and trapping of sulphur in a coal matrix during, 1579
–of coals of different rank in hydrogen and in nitrogen, structural differences in the tars and chars from the, 897
–of O- and C-benzylated Illinois No. 6 coal, 1339
–of $ZnCl_2$-impregnated coal in an inert atmosphere, 1583
–rapid, coal volatile yield and element partition in, 1347
––of brown coal and oil shale, 767
Pyrrhotite, role of, in hydrocracking of diphenylmethane, 1660

Quinoline, removal of, from coal, 1468

Raman microprobe spectroscopy: *see* Instrumental methods of analysis
Reactivity assessment of coals via a weighted mean activation energy, 1436
–chemical, of Canadian coal-derived chars, 1197
–CO_2 gasification of carbon, 1036
–coal, some physical properties of Canadian coals and their effects on, 1564
–correspondence between coal composition and coke, 101
–of coals in hydrogenation, 427
–of cycloalkanes during the solvent extraction of coal, 1476
–testing, laboratory scale, for entrained coal gasification, 205
Reactive model of coal structure, 1187
Reactive intermediate in the alkali-carbonate-catalysed gasification of coal char, 1600
Reduction of coal with lithium in ethylenediamine, 1533
Reductive ethylation in ethereal solvents, 1441
Regional News, 142
Rheological behaviour of coal liquefaction bottoms, 158

Sedimentary organic matter, unexpected enrichment of nitrogen during the diagenetic evolution of, 1508
Scanning electron microscopy, determination of organic sulphur in coal, 1645
Scanning transmission electron microscopy: *see* Instrumental Methods of analysis
Semicoke, bituminous coal and, ^{1}H n.m.r. relaxation in, 522
–enhanced reactivity of metal-impregnated peat char and, during gas phase hydrogenolysis, 30
Shale and petroleum, storage stability studies of fuels derived from, 1152
Shale oil, characterization of the highest optically active fraction of, 310
–correlating NO_x, smoke and wall temperature in a combustion turbine burner, 1731
–distillates, elucidation of the iron chloride–clay system for removal of nitrogen-containing compounds from, 1472
–identification by ^{13}C n.m.r. of carbon types in, and their relation to pyrolysis conditions, 909
–solids removed by the high-gradient magnetic separation technique, characterization of, 1459
–thermal degradation of, 1. Kinetics of vapour phase oil degradation, 401
Sintering of coal ash relevant to pulverized coal utility boilers, 1664
Size distribution, universal, of run-of-mine bituminous coals, 627
Size exclusion chromatography: *see* Instrumental methods of analysis
Slags from pulverized Western Canadian coals in a pilot-scale research boiler, viscosity measurements of, 939
Small angle neutron scattering: *see* Instrumental methods of analysis
Smoke, correlation for a coal liquid and shale oil in a combustion turbine burner, 1731
Solubility characterization of coal-derived products using pressure filtration, 1671
Solubilization, lignite, alkyl aryl ethers in, 1422
Solvents, action of, on coal at low temperatures: 1. Low-rank coals, 346
–basic nitrogenous model process, liquefaction of coal with, 961
–coal-derived, transferable hydrogen in, 1138
–coal molecular interactions, an investigation of, 571
––swelling by, 935
–donor, coal dissolution, chemistry of, 810
–effect of cresol as a co-solvent in coal liquefaction and product analysis, 285
–ethereal, reductive ethylation in, 1441
–hydrogen-donor, supercritical gas extraction of coal with, 1174
––short contact time liquefaction of coal using, 1615
–mixtures, binary, coal swelling in, pyridine-chlorobenzene and *N,N*-dimethylaniline-alcohol, 1538
–organic, effect of, on the EPR spectrum of coal, 1641
–quench, an e.s.r. study, 510
Solvent-derived and compound-class fractions in coal-derived distillates and vacuum still bottoms, 93
Solvent extraction of coal, reactivity of cycloalkanes during the, 1476
Solvent extracts of bituminous coal macerals, analysis of, 634
Solvent-induced swelling of thin sections of coal, microscopic *in-situ* studies of, 1324
Solvolysis, coal, in a series of model compound systems, 1404
Solvolytic liquefaction of coal, physical mechanism of, 1329

Soot formation by C_2-hydrocarbon/air flames, activation energy for, 1491
Specific gravity of heavy crudes, 864
Sporinite, carbonized, in vitrinite/sporinite blends, optical properties of, 827
SRC-II liquefaction of an Ireland Mine coal, kinetic rate model interpretation of the, 600
–: *see also* Distillates, Feedstocks and Fuel liquids
Steric field-flow fractionation, characterization of fine coal particles by, 621
Stockpiles, coal, distribution of free gaseous oxygen in, 943
Storage stability studies of fuels derived from shale and petroleum, 1152
Structural analysis of Yallourn coal, application of high-field, high-resolution ^{13}C CP/MAS n.m.r. spectroscopy to, 1363
–differences in the tars and chars from the pyrolysis of coals of different rank in hydrogen and in nitrogen, 897
–features, new chemical, of coal, 888
–study of asphaltene components by hydrogenolysis, 1570
Structural properties, average, definition of fossil fuel-derived asphaltenes in terms of, 883
–correspondence between coal composition and coke, 101
Sulphide, iron, colloidal catalyst, coal liquefaction, 721
––and H_2, catalytic role in coal hydrogenation, 722
Sulphonation, oleum, preparation of cation exchange materials by, from lignite, 1743
Sulphur compounds, effect of: catalytic activity of coal mineral matter, 18
–effect of, on coal liquefaction in the presence of dispersed iron or molybdenum catalysts, 329
–heterocycles in selected synfuels, determination of, 702
–organic, automated determination of, in coal, 1645
–organosulphur compound types occurring in heavy oil sands, 1649
–selectivity of coal with different degrees of oxidation, 1466
–trapping of, in a coal matrix during pyrolysis of coal, 1579
Sulphur dioxide, direct reduction of, by coal, 1450
Swelling of coals by solvents, 935
Syncrude from Athabasca oil sands, upgrading of middle distillate fractions of, 190
Synfuels, determination of sulphur heterocycles in selected, 702
Tar evolution from coal and model polymers: theory and experiments, 1302
Tars and chars from the pyrolysis of coals of different rank in hydrogen and in nitrogen, structural differences in the, 897
–constitution of, from flash pyrolysis of Australian coals: 3. A structural study on Millmerran asphaltene components by hydrogenolysis, 1570
–polymethylene compounds in low temperature flash pyrolysis, 1119
–produced by flash pyrolysis of coals, molecular weight distributions of, 606
Tar sand bitumen, viscous characteristics of a Utah, 1312
Tetralin, behaviour of, in coal liquefaction: examination in long-run batch-autoclave experiments, 334
–dissociation, effect of, on coal liquefaction: tubing bomb *versus* batch autoclave, 878
–dissolution of macerals separated from a single coal, 341
Textural changes in coal after reduction, 1533
Thermal analysis differential of lignite hydrogenation, 1610
Thermal decomposition of potassium permanganate, thermogravimetry, differential scanning calorimetry and hot-stage microscopy studies, 653
–of SRC-II distillate under surface vaporizing conditions, 185
Thermal degradation, effect of basic coal properties on the process of, 838
–of shale oils: 1. Kinetics of vapour phase oil degradation, 401
Thermodynamic equilibria in the C–H system: stability and distribution of hydrocarbon compounds, 408
Thermogravimetric apparatus, pyrolysis and oxidation of heavy fuel oils in, 657
–studies, dynamic, on the effect of boric oxide on a coke and a char, 1068
Thermogravimetry and differential scanning calorimetry of Kentucky bituminous coals, 262
–combustion characteristics of high-carbon fluidized-bed cyclone ashes, 499
–thermal decomposition of potassium permanganate, 653
Thermoplastic behaviour, characterization of vitrinite concentrates: 3. Correlation of FT-i.r. measurement to liquefaction and, 245
Thermoplastic properties of coal at elevated pressures 1. Evaluation of a high-pressure microdilatometer, 109
Trace elements in coal from the Powhatan No. 6 mine, Ohio, distribution of, 318
Ultrasonic field, acid dissolution of mineral matrix in Green River oil shale. 2. Effect of, 927
Vapour phase oil degradation, kinetics of, 401
Viscosity changes in coal paste during hydrogenation, 164
–of coal–water–methanol mixtures, 1182
–of SRC blends, effect of various phenol additives on, 593
–measurements of slags from pulverized Western Canadian coals in a pilot-scale research boiler, 939
Viscous characteristics of a Utah tar sand bitumen, 1312
Vitrinite, bituminous, aspects of the molecular structure of, 1262
–chars, retention of liptinitic structure in, 239
–concentrates: characterization of, 3. Correlation of FT-i.r. measurements to thermoplastic and liquefaction behaviour, 245
–concentrations and coals, studies of. Determination of aromatic and aliphatic CH groups, 1253
–high-rank coke, optical texture of, 1382
–high-temperature heat-treated, optical properties of, 820
–sporinite blends, carbonized sporinite in, optical properties of, 827
Vitroplast, secondary, microscopic investigation of agglomeration of coal hydrogenation residues by, 134
Volatile yield, coal, and element partition in rapid pyrolysis, 1347
Volatiles, release of, from large coal particles in a hot fluidized bed, 1013
Water vapour gasification of carbon, 1393, 1397
Weathering characteristics of coking coals: use of a gas flow test in assessing weathering propensity, 551
–of coal, natural, 292
–natural *in-situ* changes associated with, of a coking coal from southeastern British Columbia, 548
Wettability phenomena and reactions of the catalyst precursors. Mixtures of potassium sulphate and iron sulphate as catalysts for water vapour gasification of carbon, 1397
Wood oil, analysis of thermochemically-derived, 368
X-ray emission spectroscopy: *see* Instrumental methods of analysis
X-ray photoelectron spectroscopy: *see* Instrumental methods of analysis

Filmset by Mid-County Press, London SW15
Printed by Henry Ling Ltd, Dorchester, Dorset